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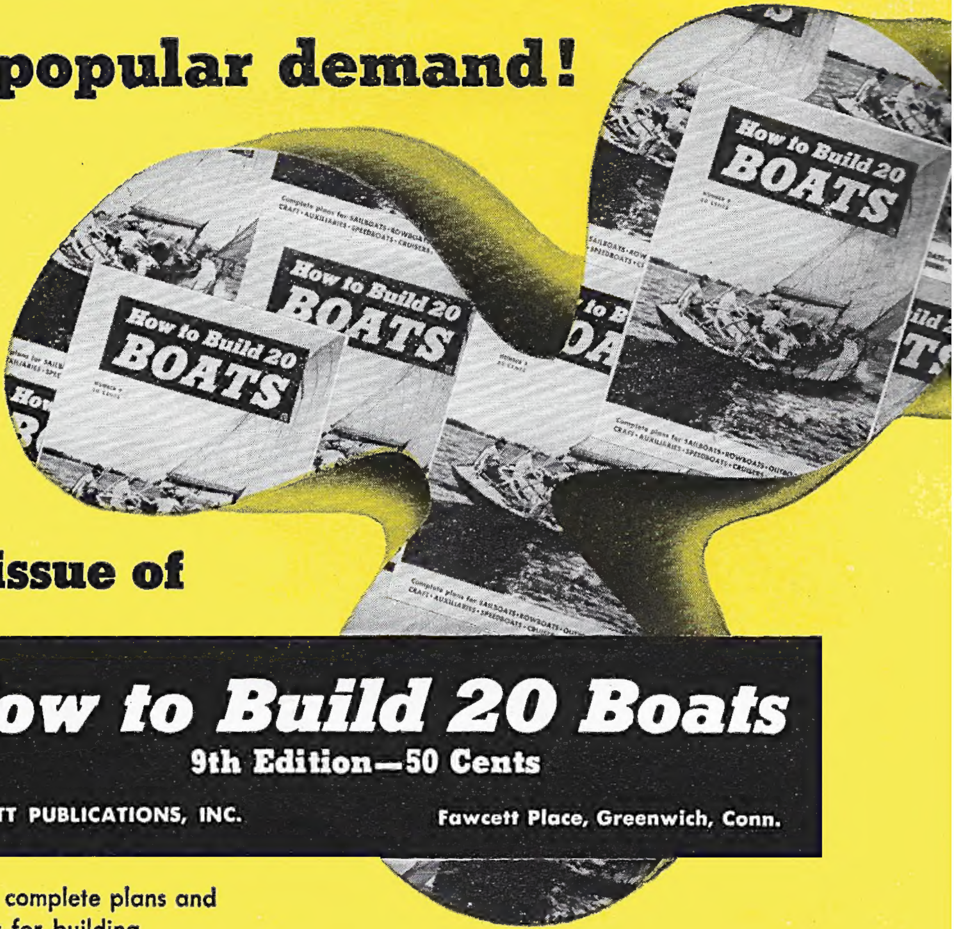

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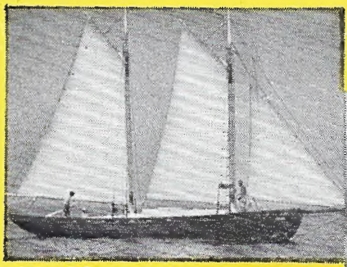

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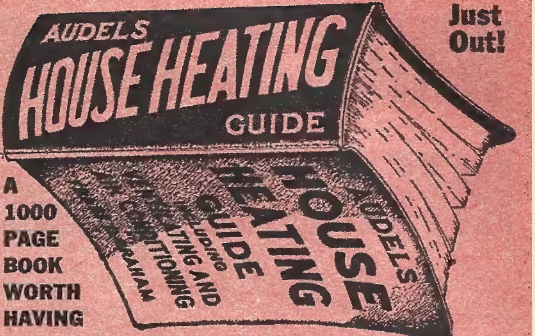
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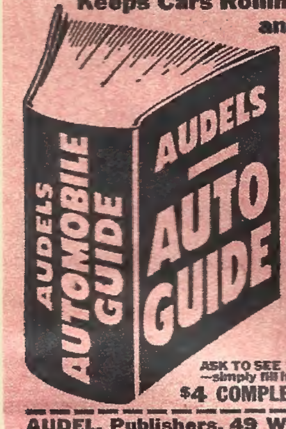
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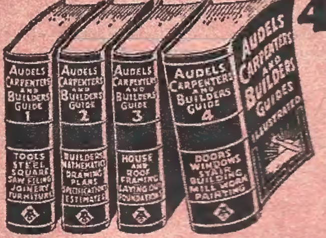
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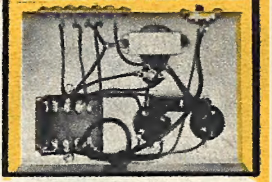

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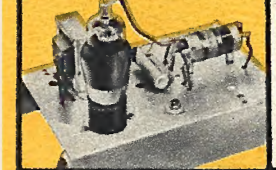

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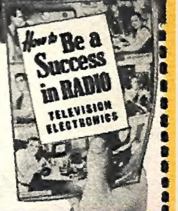

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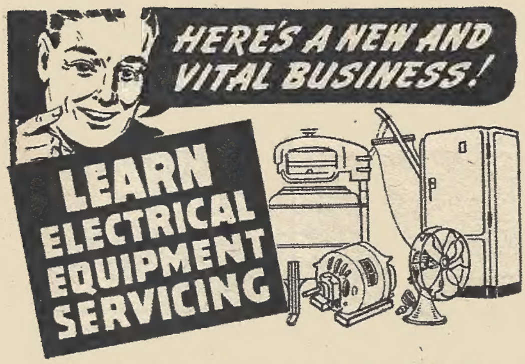
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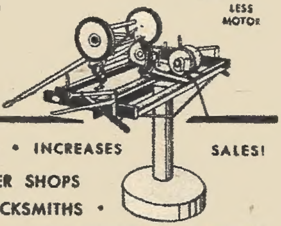

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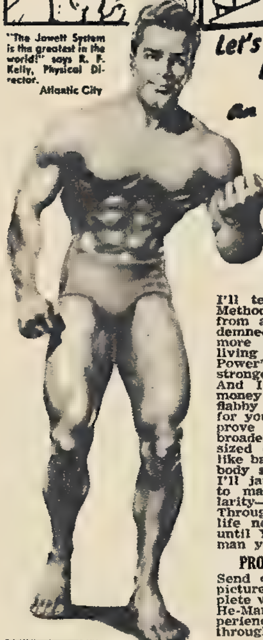

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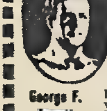

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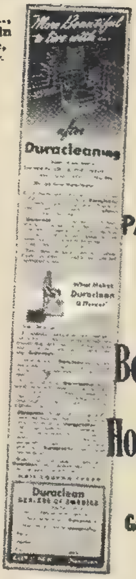
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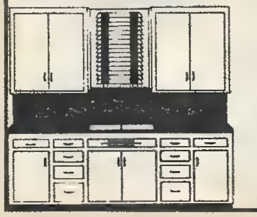

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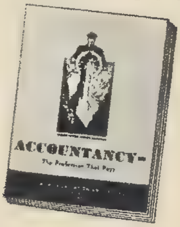

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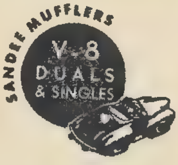

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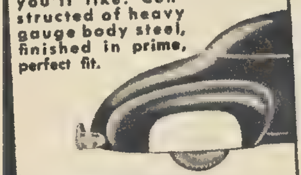

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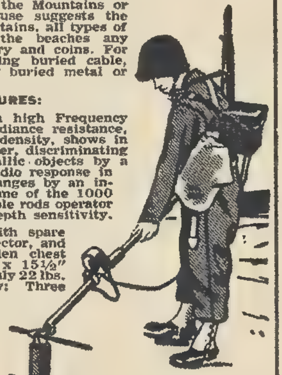

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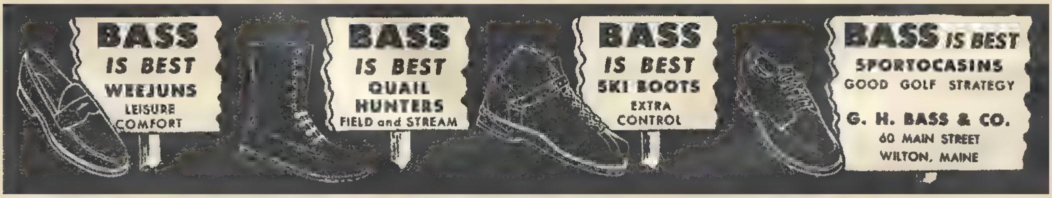

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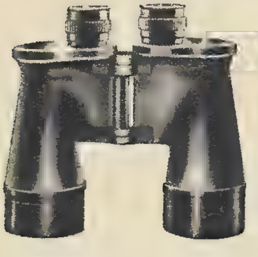

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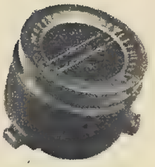

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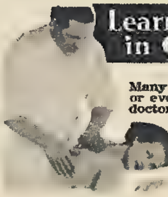

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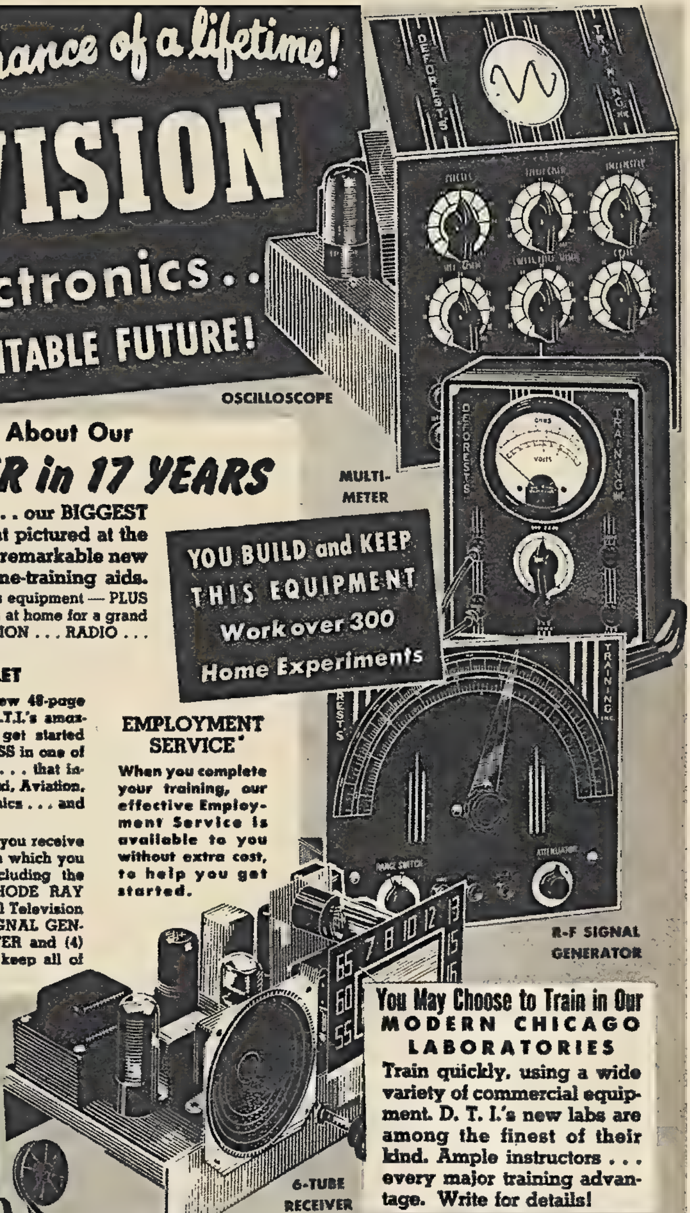

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The Editor's Workbench

John Kingdon, MI's Boat Editor, grins at some good nautical news for April—plans for an 18-ft. racer.

Bustle Buggies

The idea of putting an automobile's power plant back in the rear, where the baggage belongs, instead of up front where (most folks think) the engine belongs, isn't brand new. In fact, the little French Renault that Tom McCahill tests on page 90 of this issue has a rear engine and has (or should it be *had?*) the fabulous Tucker Tom wrote about last August.

But when a big, long-established American motor manufacturer starts seriously fooling around with a rear-engine job—that's news! In fact, it's MI's big news for April, when we bring you a detailed report (and a color photo on the cover) of the experimental rear-engine car actually built by General Motors. Want to know what the prospects are for American-made bustle buggies? Read the April MI.

Photographic Fake ?

One of the most spectacular series of color photographs ever published by any magazine, anywhere, graced the December cover of MI (see cut at right). We're mighty proud of those four pictures—and so is photographer Dave Robbins, who spent a week in the Winchester Repeating Arms Company lab at Hartford, Conn., working with their technicians and a battery of three high-speed cameras, before he emerged with the very first color shots ever made of a bullet in flight, snapped at the dazzling speed of 1/500,000ths of a second.

So what happened as the result of this photographic scoop? Well, we sold a lot of magazines. But we also received five letters, from five suspicious MI readers who yelled, in clear and bell-like tones, "It's a fake!"

If you will look carefully at the reproduction on this page of those photos, you will note that the level of the fluid in the middle bottle of Photo No. 1 is slightly lower than that of the middle bottle of Photo No. 2. Also, the liquid level of the right-hand bottle is slightly different in each of the first three photos.

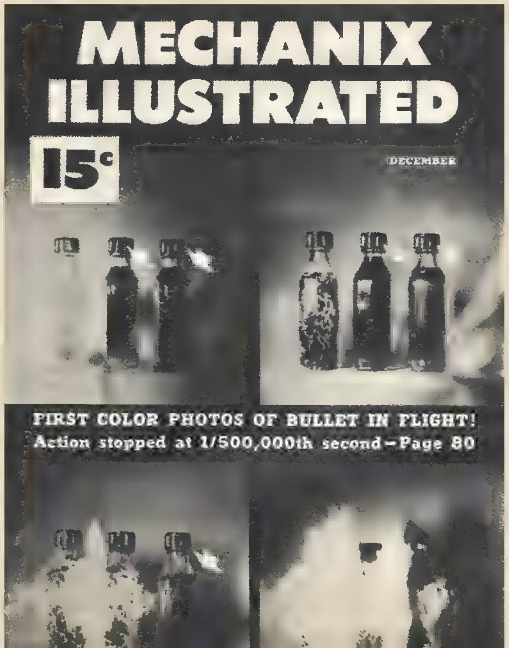
"How come?" our correspondents want to know. "Why isn't the fluid level the same in all the pictures?"

The explanation is quite simple. As he stated in the accompanying article, Robbins concentrated first on photographing the bullet as it *approached* the three bottles (filled, for visual effect, with orange, yellow and blue fluid, respectively); then on stopping the bullet as it *penetrated* the first bottle; next as it *left* the second bottle, and finally after it had *pierced* all three bottles and was winging off into space. This meant taking many, many exposures of the bullet in each of its four positions. The sequence as published on the cover of the magazine comprised the four clearest exposures.

Obviously, each time a bullet was fired it completely destroyed all three bottles—pulverized them, in fact, into almost imperceptible flakes of glass. After each shot, new bottles had to be filled with colored fluid and set in position on the model stand. Quite frankly, the reason the bottles weren't filled to precisely the same level each time was that it just didn't occur to anybody to do so.

Despite this apparent paradox, each of the four pictures in this series *was* photographed at 1/500,000ths of a second and this *was* the first time that such terrific speed had been recorded on color film.

"Fake," huh? Not by a long shot. •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Action stopped at 1/500,000th second—Page 80

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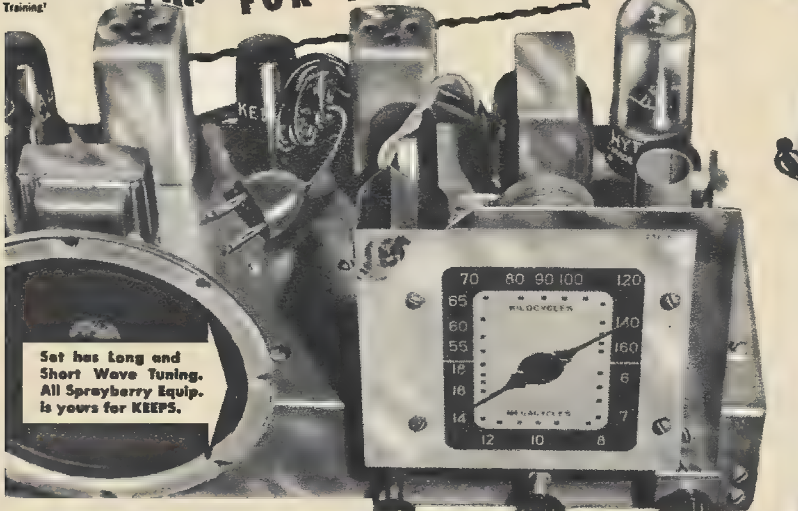

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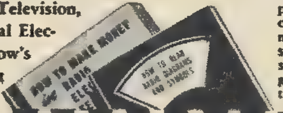
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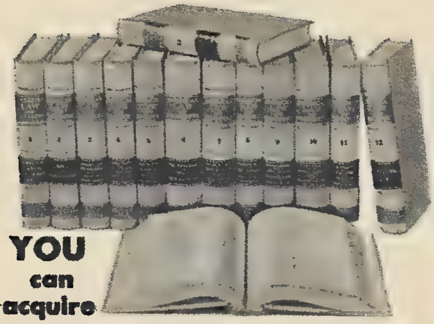

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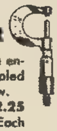

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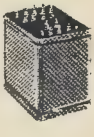

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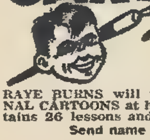

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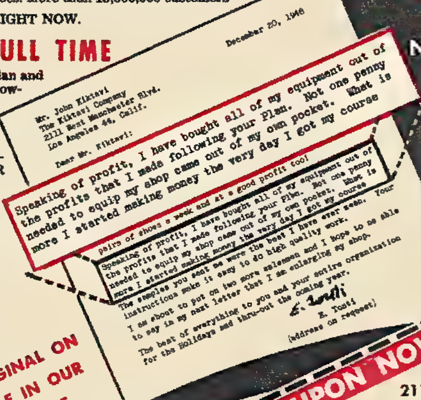

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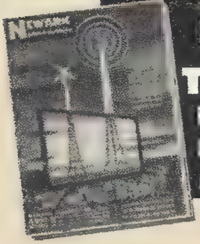

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Conducted by Joseph H. Kraus

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Address your inquiries to "Your Invention Clinic," MECHANIX ILLUSTRATED, 67 West 44th Street, New York 18, N. Y. Mr. Kraus will answer as many letters as possible in this column. His services are free.

● Inventing a New Game

Leonard C. Emmert of Kalispell, Montana, has invented a game played with marbles and one die. People who have played the game like it, he reports.

ANSWER: Hardly any game is worth inventing and patenting except for the personal satisfaction it might bring. Occasionally someone will market a game that overnight becomes a fad and makes its sponsors a lot of money. Then, if the game's backers aren't careful, the fad may blow too big and burst like a bubble. Unfortunately, there's no way to tell when the public may go wild about a game or suddenly get sick of a fad and drop it cold.

You could easily dream up a hundred games for marbles and dice. You cannot protect the combination except where it is a specific part of your design. You failed to explain just how your game was meant to work. Apparently your marbles are simply markers to designate positions. Anybody else could design a number of games with the same units. You would have to have a special plan of play attractive enough to catch the public's fancy.

If you can market your game and feel sure that you can find an outlet, you ought to apply for a patent. If you are merely hoping to sell the patent, you had better forget the game unless you enjoy playing it with your friends.

● Interlocking Chain Stanchion

A Mr. Y. Hayakawa of New York City wants to know whether his design for an interlocking chain stanchion has practical value.

ANSWER: It's unusual to find an inventor who can't discover a practical value for his design. Either you're very gifted or you're just plain lucky. If your interlocking stanchion will do what you claim, it should be quite a valuable invention.

Your stanchion may not remain rigid, however, particularly after it has been in use for some time. Also, the parts may be too loose and the interlocks may have too much play. Even a slight looseness may cause the higher structures to sway.

We don't like this idea for use as a jack or short-lifting mechanism. Construction costs and the weight of the article would be out of line. But there are hundreds of other uses, if the article works the way you say it does. For example, ladders, temporary radio masts, observation posts, building scaffolds, safety escapes or elevators for fire hose are a few of the practical uses for an article based on this design.

Even a new mechanism, however, probably would be rigid in only one direction. The structure would be very weak at right angles to the position of its greatest strength. No doubt, though, you could increase your article's strength in all directions.

Assuming that your model works satisfactorily, you did the right thing when you applied for a patent. Think about your idea a bit and you may line up a thousand uses for the unit. Any one of those uses, too, would justify the added expense for such an article. You could even stage the East Indian trick of making a rope apparently rise up and stand rigidly on end. Exploit your invention wisely and you'll have a real money maker.

● Spring Holder for Stylus

W. T. Pearson of Vicksburg, Mississippi, has patented a spring holder for a stylus. When you push a pencil or pen into this holder, you get an even pressure and a springy effect on the point, he says. This improves penmanship and rests the fingers, he maintains. He wonders if his holder design will prove a success.

ANSWER: We think you're off the beam on your stylus holder. Not only is it too bulky but it gives you nothing that you can't get more simply by merely using either a stiff or flexible point. Such a point will do everything your unwieldly holder will do—and do it easier and more neatly.

[*Continued on page 30*]

INVENTORS

Unless an inventor is thoroughly familiar with such matters, he is advised to employ a competent registered patent attorney or agent as the value of patents depends largely upon the skillful preparation of the specification and claims.

For his guidance, the following are the usual preliminary steps which the inventor takes toward patent protection.

The "Evidence of Invention" form mentioned below is offered as a convenience to the inventor in making his disclosure of invention.

The inventor should date and sign his disclosure and have it witnessed by two or more persons who are capable of understanding his invention. The disclosure should then be mailed to the registered patent attorney or agent whom he selects to assist him. The disclosure should be accompanied by a letter authorizing the patent attorney or agent to conduct a preliminary search among previously granted U. S. patents for similar types of invention. The patent attorney or agent then prepares a report of the probable patentability of the invention and recommends the further course the inventor should take, provided the report indicates possible patentability.

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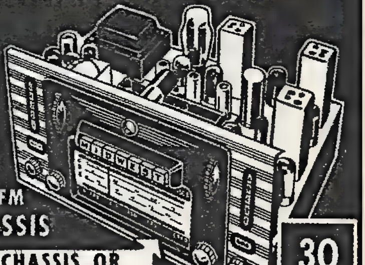

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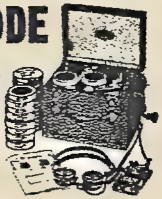

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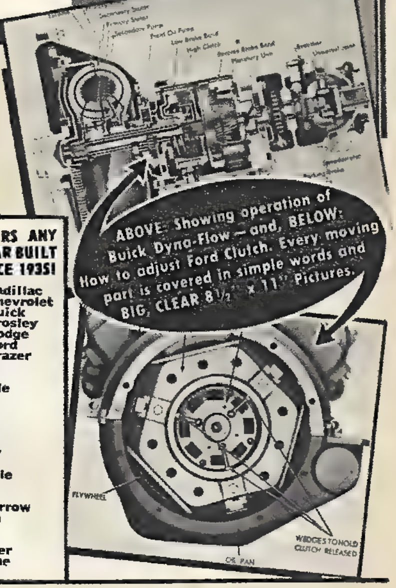

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[*Continued from page* 26]

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[*Continued on page* 35]

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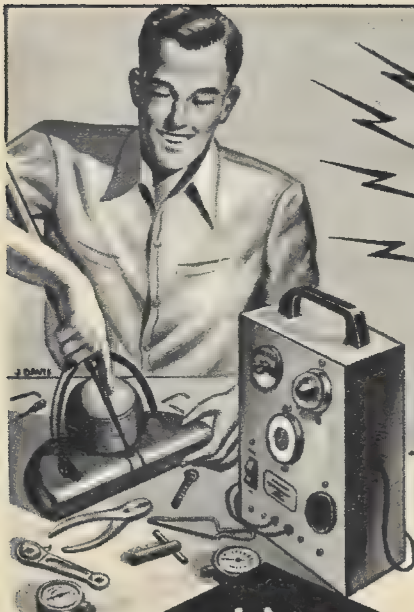

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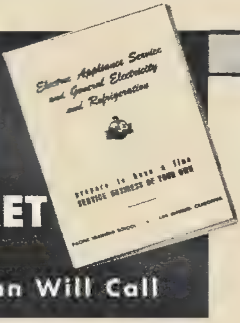
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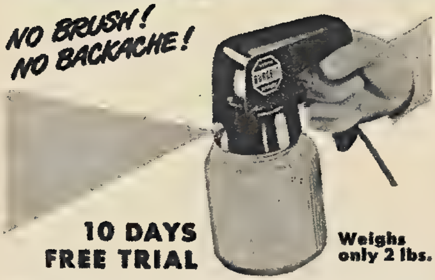
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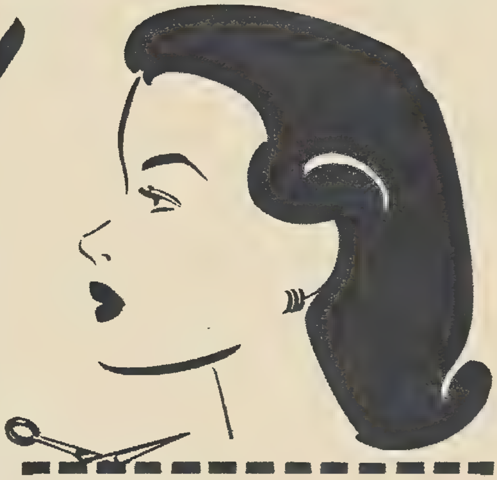

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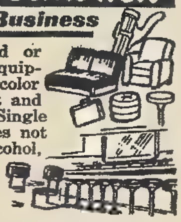

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Your Invention Clinic

[*Continued from page* 30]

opener design which was sold many years ago for ten cents each. Instead of an adjustable center point, the center of that opener was part of the tool and the cutting point was movable. This type of cutter is much easier to manipulate than the one in your design and costs less to produce. Neither one is as good as the modern cutters which give a rolled edge instead of a sharp one and still cost only ten cents. Furthermore, you can use these newer openers on cans of any size or shape, even flat tins; they remove the entire top and leave no projecting metal tabs. With your tool, you may not even be able to cut the top from the can unless you punch the exact center of the top with the opener.

We don't have any record of your market researcher but your report came from a reliable source. You may feel sure that you will get the services for which you paid. We urge you to spend as little as possible on this idea now.

Sell the patent for whatever you can get but you'll be very fortunate if you get anything out of your project.

Lathe Feed Control

Joseph B. Ruatti of Los Angeles sends a design and photos of a unit to limit carriage travel to the right or the left on a lathe.

ANSWER: You have designed a fine attachment which many a lathe worker should appreciate. The arrangement is all the better because no holes need be drilled to accommodate the parts. Your invention falls down, though, on an important point. As the tool now stands, you can use it only on the Craftsman lathe. You should modify the device so that you can readily attach it to an Atlas, South Bend or other units. In a personal letter we are recommending specific modifications for adapting your feed control to other lathes. You're on the right track and we feel sure the suggested modifications should multiply the sales possibilities of your device.

Color Photography

Robert L. De Weese of Longview, Washington, wants our help in getting a start in color-photography research and sends us the conditions of employment that he would like in the field.

ANSWER: You are not alone in what you would like for "conditions" of work—a big salary and a chance to play around with a pet

[*Continued on page* 41]

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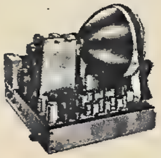

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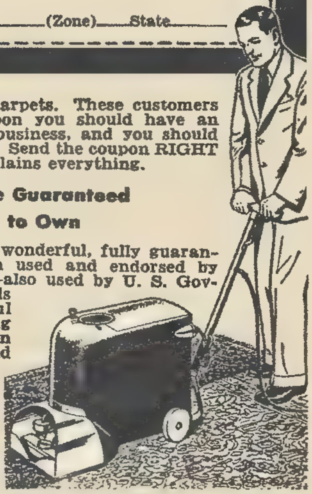

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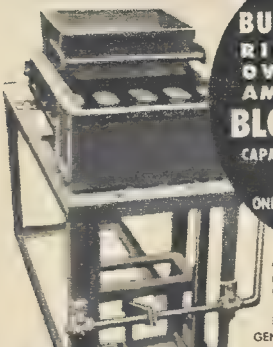

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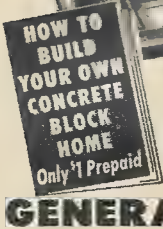

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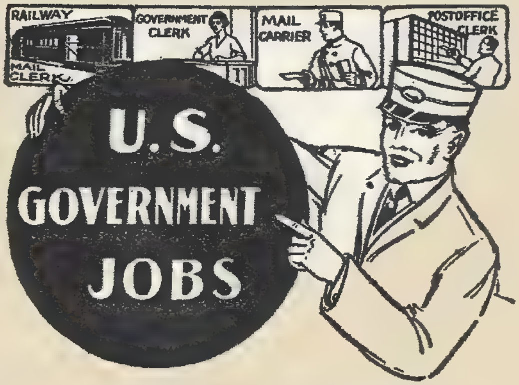

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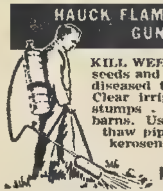

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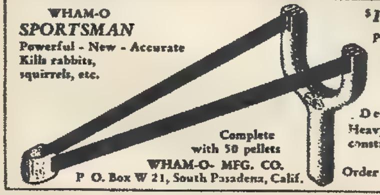

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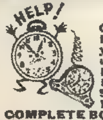

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Your Invention Clinic

[Continued from page 35]

idea and get a ten per cent interest in any successful development.

And what have you to offer for all this? Are you familiar with all the ways for making color photographs? Apparently you are not, for you should know that the additive process requires only two "solutions" and produces better results with a black-and-white film than does the regular colored film. If you use this process, though, you also have to have a special projection setup.

Your idea for developing a new color-photo system isn't original and indicates that you haven't studied current production methods carefully enough.

If you do land a job in a research laboratory and finally get assigned to the work in which you are interested, your salary probably will be all the compensation you'll get for any inventions you think up. Any lab developments for which you are wholly or partly responsible will belong to your employer. In research work these days, generally you are required to sign a contract that gives you no share of the profits from any invention developed during your employment.

You ought to become much better informed in color photography, since that's the field in which you want to do your lifework. With better knowledge, you can set up your own "research lab" in the cellar—or the kitchen or bathroom. Your private "lab" in your home then will be more than ample for you to develop any photo ideas you have. Then, if you patent any of your ideas, you can sell or license them at your own terms, without any heartache about turning the profits over to somebody else.

● Chambered Flash Bulb

John I. Lowgren of Chicago sends a design for a flash bulb with compartments. He wants to know whether he is wasting his time.

ANSWER: Yes, you are. To make such a bulb, you would need very special glass-blowing equipment. Only glass would be satisfactory for dividing the light bulb into separate chambers. And you can't use foil in your chambered bulb because heat from a single flash will set off the foils in all the other chambers.

From a sales viewpoint, failure of any one compartment would make the bulb useless. A bulb of your design would take ten times as much effort to build and test as would separate bulbs for every chamber in your flash. Other drawbacks are that your bulb would have to be four times as large as an

[Continued on page 43]

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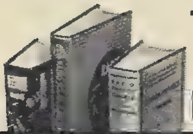

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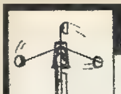

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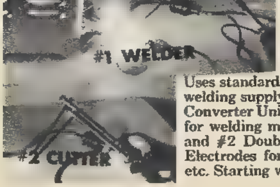

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Your Invention Clinic

[Continued from page 41]

ordinary one and that the holder would have to be modified to take your oversized bulb.

And after all your work, what have you gained? No decrease in size, no economy, no greater flash, no improvement in handling speed. Instead, you give both the manufacturer and the user a headache. Take our advice—forget the whole project!

Toy Bird That Pecks

K. L. Hudnall of Sacramento, California, asks what we think of his design for a toy bird that pecks.

Answer: In our opinion, your toy design has some merit. You should test your design further by building a working model. This should not be difficult, since your toy bird appears to be fairly simple in construction.

Before building your model, we suggest that you have a patent search made. If there's a possibility of protecting your design, then get busy and work out the idea in a model.

You may have trouble selling your patent, since the market is already heavily loaded with toy ideas. The toy industry, though, may expand again within a few years and thus improve your chances for success. Your future should depend on what protection your attorney finds you may get for your design and on your willingness to take the risk.

Water-Powered Brush

Edward F. Haines of Allentown, Pennsylvania, has applied for a patent on a water-powered brush. He'd like to know if he should make a model of his invention.

Answer: You should have made a model before you applied for a patent. A design may look fine on paper but it doesn't mean a thing unless you can convert that paper idea into a practical working idea.

When you finally do build your model, you will find that the brush will stop as soon as you put a slight pressure on the bristles. You don't have enough power in the water to drive the brush against the pressure and friction you must have to make your gadget scrub effectively.

There ought to be a good market for a water-powered brush—but more for washing the car than for cleaning the kitchen.

You will have to modify the construction to remedy this pressure trouble. To be really satisfactory, your brushing device should be powerful enough to scour a pot till it shines. The idea can be worked out. Better roll up your sleeves and see what you can do now.

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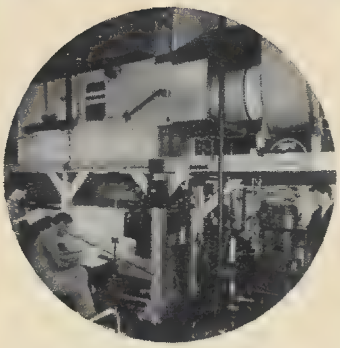

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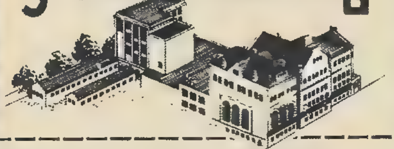

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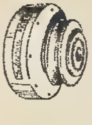

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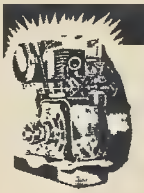

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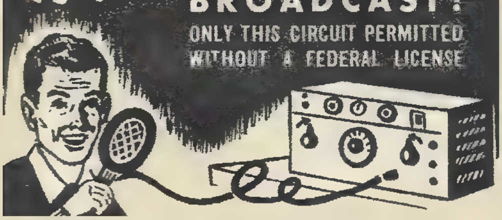

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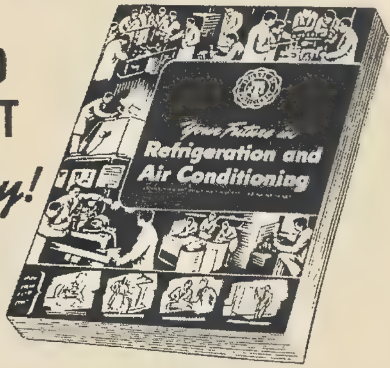
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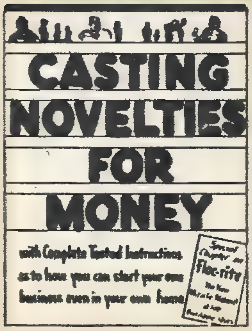
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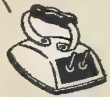

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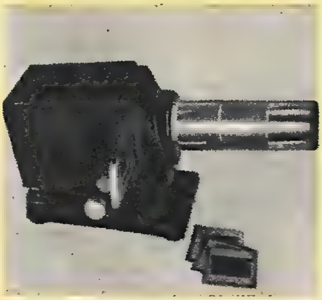

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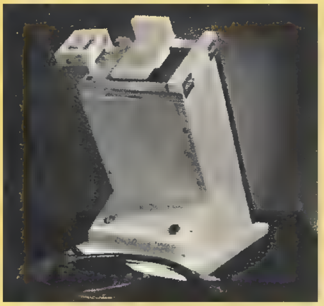

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GUSTAVE MILLER—Patents and Trade Marks—39-C Warner Building, Washington 4, D. C. Registered Patent Attorney. Associate Patent Examiner, U. S. Patent Office 1922-1929.

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GEM CUTTERS "Templet," 32 shapes, hearts, ovals, cross, etc. Dollar. Bitner's, Box 1191, Santa Monica, Calif.

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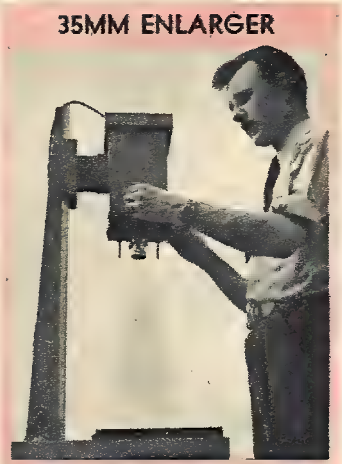
CASSITERITE 25c, **BIXBYITE** 50c, Vial Fools Gold 25c. Hobbyist, A114, Winston, N. M.

"ROCKS" WANTED. Information; postcard. Science, Dept. C, 2770 Dale, St. Paul 8, Minn.

MISCELLANEOUS

OUT OF print books found quickly. Send wants, no obligation. free catalog. Coast Bookfinders, Box 8686, Los Angeles 46, Calif.

35MM ENLARGER



An MI project of especial interest to the minifan. This particular enlarger was built around a Leica though any other miniature can be used just as well. The drawings show very plainly all the parts needed to make this versatile little job. It features an arrangement that permits the film to be advanced without any chance of your favorite negatives being scratched as the condenser is lifted out of the way to advance the film. When lowered, the weight of the condenser serves to keep the film perfectly flat and in the focal plane. Blueprints and descriptive text are available from the MI Reader Plan Service, Fawcett Building, Greenwich, Conn., for 50c. Ask for Plan No. P-4.

GIGANTIC MAIL, magazines, catalogs. Listing three times 25c, twelve times 50c. Waddell's Directory, Department A, 341 East 76th, New York 21.

TREASURE LOCATORS, Mineral Detectors. Geiger Counters for Uranium ores. Free literature. Fisher Research Laboratory, Inc., Palo Alto, Calif.

"THIS IS It!"—Learn Sewmachine Repairing, plus profitable installing our motor kits, etc. Write—Taylor Service Co., Hamilton 7A, Ohio.

FRESH FLA. oranges or grapefruit—$2.95 bu. Terms, cash; F.O. B. Miami 38, Fla. Jimmy Stewart, 1035 N. W. 58th Terrace.

RECEIVE MAILS, magazines, samples. Your name in numerous mailing lists 10c. Greenwood, 273 Broadway, New York 7.

PANNING GOLD—Free instruction booklet —catalogue mining books—supplies. Old Prospector, B-226, Dutch Flat, Calif.

LUMINOUS POWDERED pigments. Trial offer and listing. $1.00 prepaid. Glowellco, 475-IM Fifth Ave., New York 17.

WE PURCHASE Indianhead pennies. Complete allcoin catalogue 10c. Fairview, 277 Broadway, New York 7.

SEND 6 TIES, receive 6 different cleaned ties. $1.00. Green Co., 27 Pleasant Ave., Pleasantville, N. J.

OLD GOLD WANTED

HIGHEST CASH for old, broken jewelry. Mail gold teeth, watches, rings, silverware, diamonds, spectacles. Satisfaction guaranteed. Free information. Rose Smelting Co., 29-K East Madison, Chicago.

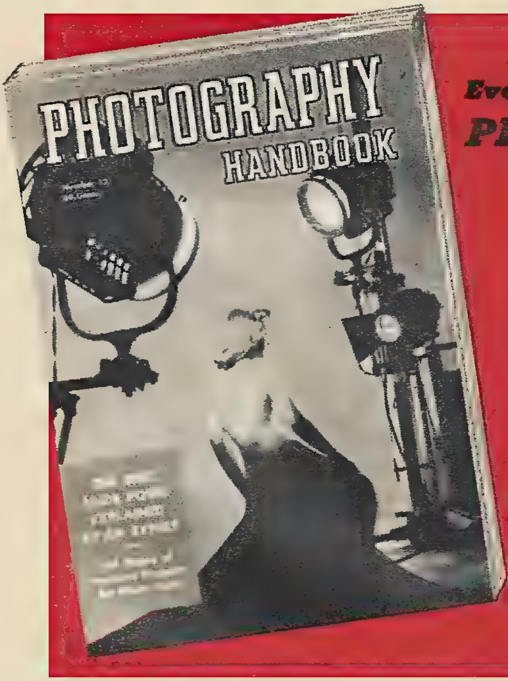
WANTED MISCELLANEOUS

SWAP—SELL—Buy anything. Free lists. Swappers' Guide, Box 415, Evansville, Ind.

WATCHES, WATCHMAKING, ETC.

WATCHMAKERS' TOOLS, supplies sold, bought. Catalogue! Bengall Co., Culver City, Calif.

WATCHMAKERS, BEGINNERS; watches; movements. Price list! Box 1874, Chicago 90, Ill.



Every Photo Fan Has Been Waiting For

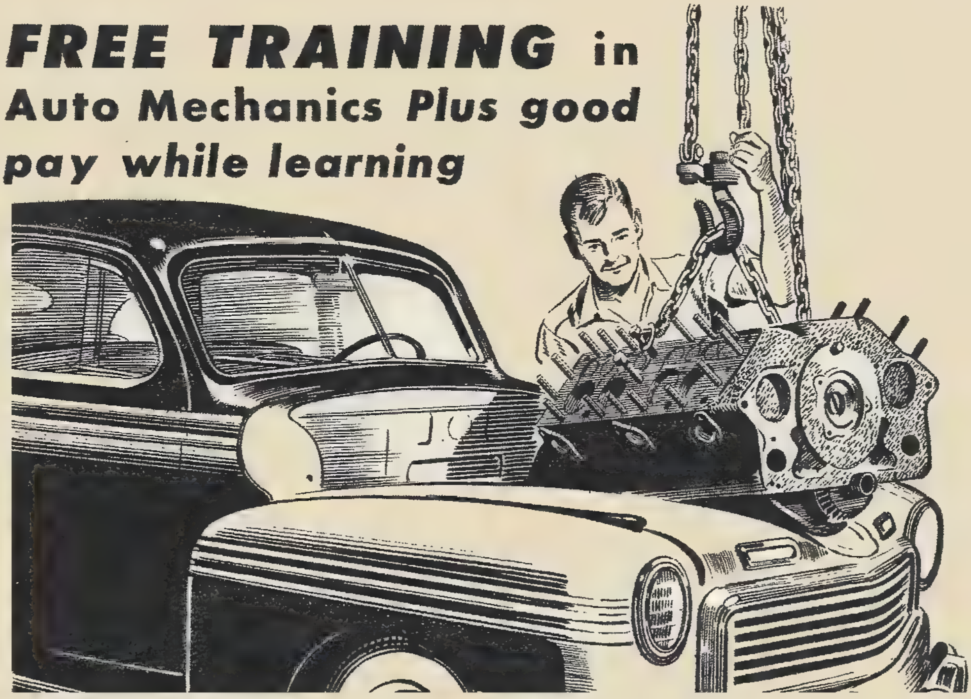
PHOTOGRAPHY HANDBOOK

The twelfth edition of this famous book is now on sale. Here is a partial list of contents:

Photo Backgrounds While You Wait; Posing the Nude; Which Filter?; How to Get Clouds; Photographing Your Pet; How to Compete in the Salon; Making a Bellows; Modernize Your Graflex; A Rapid Darkroom Washer; Movie Titles; Focusing a Fixed-Focus Movie Camera; High Speed Flash Lamp; What to Do With Your Pictures; Tripods.

Can you afford to miss any of these? Sixty cents at your favorite newsstand will give you the answer. A FAWCETT PUBLICATION.

FREE TRAINING in Auto Mechanics *Plus* good pay while learning



Become a first-class automotive mechanic and you're set for life . . . sure of a good job or able to run a shop of your own. Here's your chance to learn this valuable trade and the training won't cost you a penny. In addition, you'll get good pay while learning.

The United States Army is offering this outstanding opportunity to a limited number of young men who have high school diplomas, or state certificates to show equivalent education. Under the new Army plan, you can sign up for the automotive school and be *sure* of enrollment immediately after basic training.

In the Army trade schools you'll be taught by experts, with equipment that is the very latest in the automotive field. These schools are the finest in the world. So good that many colleges and trade schools give credit for work done in them.

Your pay starts immediately. You'll get $75 a month, plus free food and housing . . . free clothing and equipment . . . free medical and dental care . . . free retirement plan . . . low-cost insurance. In all, the pay is equal to $211.50 in civilian life.

You owe it to your future to get details on this opportunity today.

You can get the facts, without obligation, at the nearest U. S. Army Recruiting station.

INTERESTED IN SOME OTHER TRADE?

Automotive Mechanics is only one of more than 60 U. S. Army trade schools open to qualified young men. Ask your Recruiting Officer about any trade in which you are interested. Chances are he can offer you what you want.

PEACE IS AMERICA'S MOST IMPORTANT BUSINESS

The new peacetime Army and Air Force offer young men . . .

- ★ WIDEST CHOICE OF CAREER JOBS
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U.S. ARMY and U.S. AIR FORCE
RECRUITING SERVICE

mechanix
illustrated
March 1949

A curious case was the woman who galloped a stool around the kitchen while sound asleep.

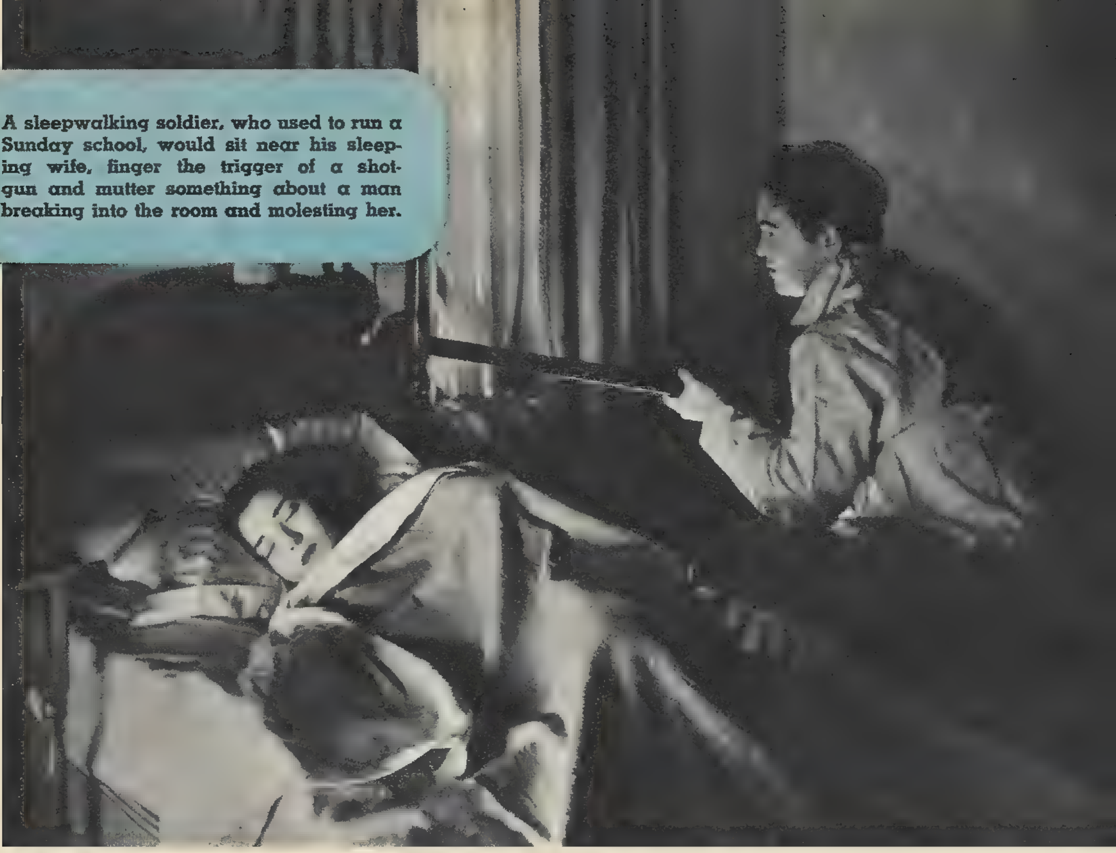
Strange Facts About Sleepwalking

By Carlton Brown

Like the man who awoke to find himself drowning in a river, you may roam the dark with 4 million other somnambulists—and never know it.

THE pretty young woman was the strangest case Dr. Dyce of Aberdeen, Scotland, ever saw. She was straddling a stool in the kitchen and riding it around the floor like a hobby horse. As she galloped the stool, she urged it on with frantic cries and whipped the wooden legs with one hand, just as though she were on a live mount.

By day, she was quiet, shy and painfully prim, the doctor learned. But almost every night there was a weird change in her modest behavior. Suddenly she would get out of bed in the dark, find her way to the



A sleepwalking soldier, who used to run a Sunday school, would sit near his sleeping wife, finger the trigger of a shotgun and mutter something about a man breaking into the room and molesting her.

kitchen and start dashing madly about the room astride the stool.

"What are you doing?" Dr. Dyce asked the young woman as she rode past on the stool.

"Racing at Epsom Downs—of course!" she replied.

This was not insanity. What was it? Dr. Dyce diagnosed the case immediately. It was sleepwalking or somnambulism—and a galloping case at that, but not a cause for serious alarm.

The young woman did other odd things in her sleep, too. She dressed her children, set the table for breakfast and put everything in its proper place—without once opening her eyes!

Her family took her to church once while she was in this sleepwalking state. She gave every indication that she heard the minister and understood the sermon he was preaching. But, when she was awakened, she did not even remember that she had gone to church. Then, later on, when she was sleepwalking again, she repeated the sermon word for word!

Dr. Dyce's patient showed some of the peculiar quirks of a mysterious disturbance of sleep that affects about one out of every 50 adults and a higher proportion of children. Families that have a sleepwalker in their midst usually try to keep the sleepwalking a secret, though that's difficult to hide from the neighbors in some families where everybody prowls about at night in a trance.

Because of the attempted secrecy about somnambulism, there are no exact figures but estimates indicate there are more than 4,000,000 sleepwalkers in the United States alone. If you never walked in your sleep while you were a child, chances are you never will. But if you ever suffered the "night terrors" of childhood, you may wake up some night to discover that you *are* a sleepwalker. For, some people have no idea that they walk in their sleep.

A few years ago a man woke up to find himself drowning in the Bronx River in New York without knowing how he got there. He told the rescue party that he had never before known that he did any sleepwalking—much less sleepswimming.

Sleepwalkers never have any memory of their nocturnal rambles when they wake up—although they may recall a dream like the one they have been acting out. So, you see, you may walk in your sleep and never know it.

Night terrors are fairly common and usually not serious. The child sits up or jumps out of bed with a cry and does not

Robin Knott, two, got out of bed during his sleep, picked up a gun and ran away. Police finally rescued him for his frantic parents.

recognize his parents or surroundings. This form of sleepwalking may be brought on by problems in the home or school, undue excitement before going to bed or an upset stomach. Such sleepwalking will stop if the cause is found and corrected. But it does indicate a reaction to dreams that may show up again in adult life.

In the great majority of cases, somnambulism isn't dangerous. After a brief stroll, the sleeper generally returns to bed within 10 or 15 minutes. He often finds his way around in darkness that would baffle him if he were awake. If he comes to an obstacle, he moves it to one side or walks around it.

Most often, his features are expressionless, his eyes open and staring. The pupils are somewhat dilated but contract quickly on meeting light. Sometimes the eyes are partly or entirely shut, and flicker open only briefly, to register the sleeper's surroundings on his mind with photographic clarity. Then, with eyes closed again, he can make his way around in a room whose landmarks he has memorized in that brief flash. Usually sleepwalkers [*Continued on page* 132]

Clad only in a white nightgown, this Los Angeles woman, Mrs. Anna Bogdsnoff, 30, above, walked into the path of death at the busiest corner in town.

One of the amazed motorists at last realized that the woman was asleep and came to her aid. Here two officers approach and pull her out of the traffic.

Awakened finally from her sleepwalking trance, she struggles in sudden fright and tries to break away before the policemen can bundle her into the sedan.

AIR WAR OVER

THE ARCTIC

Our planes are waging a relentless battle to conquer polar cold and guard America against sneak attacks across the world's roof.

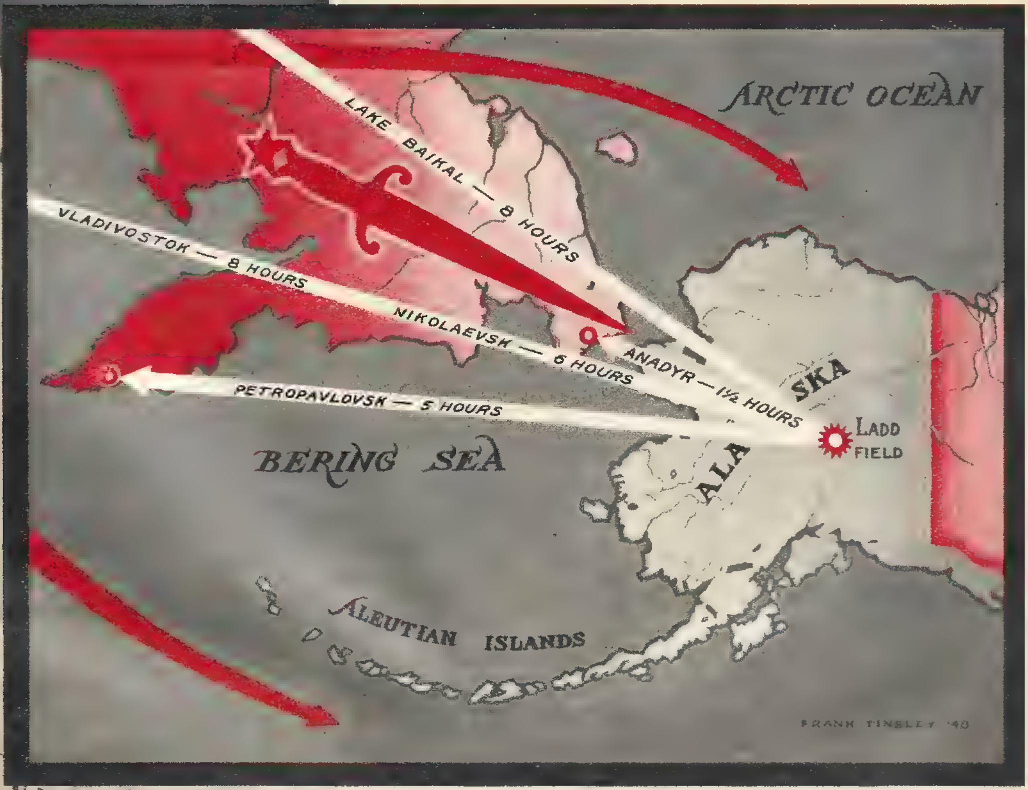
By Major General K. P. McNaughton, U. S. Air Force

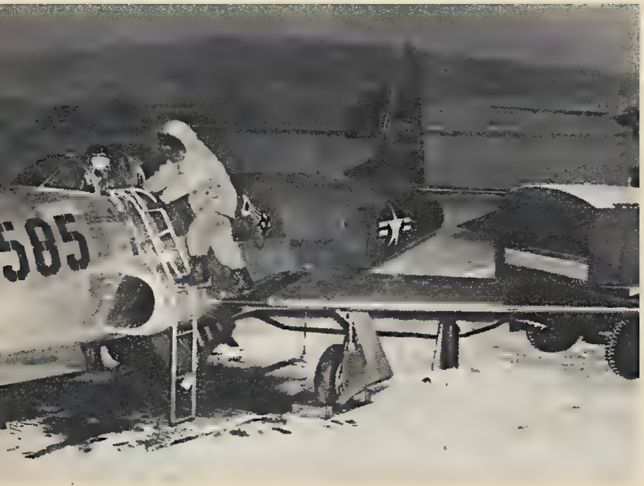
FOR nearly four centuries the Arctic defied the hardiest explorers from the temperate zones. This vast ice-locked world with its midnight sun, Aurora Borealis and paralyzing cold has been an impregnable barrier across the shortest route between the East and West.

Now the development of long-range aircraft is wiping out that barrier and, for the first time, exposing America to bombing and invasion by air. The polar regions have become vitally important to our national defense. For, should that dreaded World War III suddenly explode upon us, the key battles probably will be decided in the air over the Arctic.

By traveling the polar routes, military aircraft now

If East-West tension bursts into war, B-36s based at Ladd Field, Alaska, could knock out the Trans Siberian railway and cripple Russia's power in Asia. B-36 flying time to possible Soviet targets is shown in white arrows. Red dagger, arrows mark our danger points.


ARCTIC OCEAN
LAKE BAIKAL — 8 HOURS
VLADIVOSTOK — 8 HOURS
NIKOLAEVSK — 6 HOURS
ANADYR — 1½ HOURS
PETROPAVLOVSK — 5 HOURS
BERING SEA
ALASKA
LADD FIELD
ALEUTIAN ISLANDS
FRANK TINSLEY '48



may fly with ease from the major cities of Europe and Asia to the industrial centers of the United States. For example, by way of the Arctic, the air distance from Chungking, China to New York City—two of the world's most strategic cities from the military viewpoint—is a mere 7800 miles against 12,700 by land and sea. Long-range jets could cover that shorter route in a matter of hours, where the conventional surface journey would take at least three weeks.

Should an airfield be set up on the frozen wastes near the North Pole, cities open to shuttle air attacks would include New York, 2950 miles away; San Francisco, 3150; Detroit, 2850; Moscow, 2050; Berlin, 2200, and London, 2300.

In these tense times, America therefore must keep a watchful "aerial eye" guarding the top of the world. To fill this need, the United States Air Force is training and organizing what might be called an "Arctic Air Force" to meet and destroy any enemy bombers or guided missiles before they can strike our industrial targets.

Three large Air Force fields are now in operation in Alaska. At Ladd Field, near Fairbanks, an outdoor cold-weather test unit is maintained. In the immediate area, at Mile Twenty-Six,

Helicopter and dog sled, top, team up to rescue airmen forced down in the Far North. External power unit, above, starts frigid jet engines.

a World War II fighter base has been enlarged to accommodate our heaviest bombers. To the west, near Anchorage, Elmendorf Field is under expansion. Emergency airfields are located throughout Alaska and at strategic points along the Aleutians.

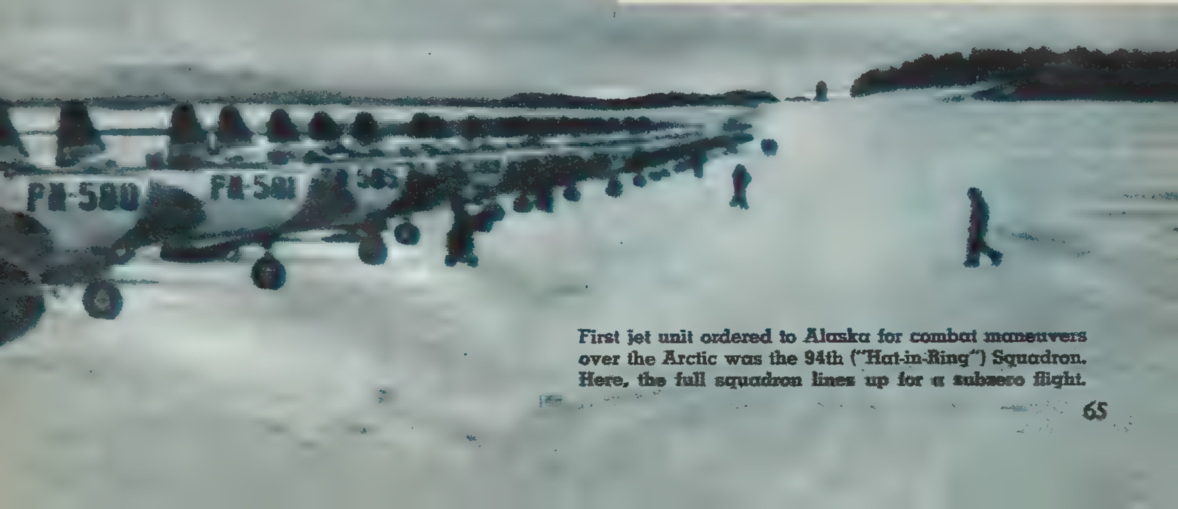
Flights by Alaska-based squadrons during the past two years have shown our Air Force how to operate planes and equipment efficiently in the polar regions and have proved that U.S.A.F. units can fly anywhere in the Arctic during any time of the year. It is no accident, moreover, that jet planes have been undergoing intensive tactical exercises up there for well over a year.

Within recent months remarkable progress has been made in our knowledge of polar aerial navigation. Alaska has been mapped comprehensively for the first time in history. Our airmen have cleared up much of the mystery concerning the magnetic north pole—which is really three poles in a magnetic field in the vicinity of Prince of Wales Island. Now, thanks to such discoveries as this and a revolutionary system of navigation, a pilot can fly anywhere and fix his location to within one mile.

When the 46th Reconnaissance Squadron arrived in Alaska, navigators found their maps were marked with huge white areas marked "Unexplored." They also found that the charts used in the lower latitudes were not practical for polar, or high-latitude, navigation.

Converging latitudes at the top of the world made guesswork out of most attempts to navigate [*Continued on page* 146]

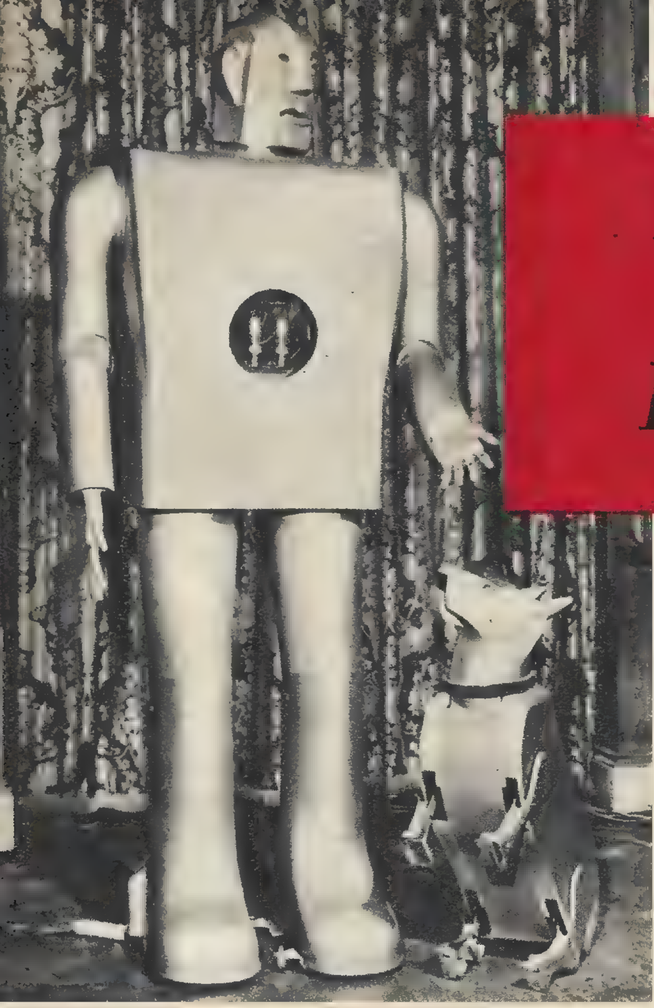
Snow-equipped paratroopers, top look happy before bailing out of a C-82 Packet in Exercise Snowdrop. After landing, soldiers, right, man a gun.



First jet unit ordered to Alaska for combat maneuvers over the Arctic was the 94th ("Hat-in-Ring") Squadron. Here, the full squadron lines up for a subzero flight.

Robots ARE People!

By Richard Dempewolff



Mechanical men may own dogs, too. Here Sparko the electric pup sits up and begs a look from Elektro, his master.

The Swiss watchmaker's little writing robot pens a greeting for his fascinated visitors in his Neuchatel museum home.

Modern scientists can make automatons that walk, talk, see—even think like a man. But only an 18th-century artisan created 'human' puppets.

A fantastic family lives in Neuchatel, a watch-making town hidden deep in the Swiss Alps. It's a small family—only two boys and a girl; but it has a long history. For each one of the three was born nearly 200 years ago!

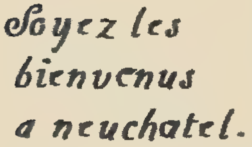
Despite two centuries of living, they show no signs of age and still look fresh and elegant in their fancy 18th-century costumes. One brother is an artist, the other a writer and the young lady a musician. These wonder children may keep all their endearing young charms and continue to use their creative talents for a thousand years. Neither youth nor health ever fails this remarkable family, the uncanniest members of that queer race man dreamed up—the robot people.

The Neuchatel robots are no jerky, mechanical dummies. One of the robot boys actually breathes. His sister puts a very real, heart-melting pathos into the music she plays on a genuine old harmonium.

They are so amazingly human, not only in looks and individual personality but also in their apparent exercise of free will and reason, that they make flesh-and-blood observers gasp in awe. And, like Dr. Frankenstein's monster in Mary Wollstonecraft's famous story, these robot children nearly caused their father's death.

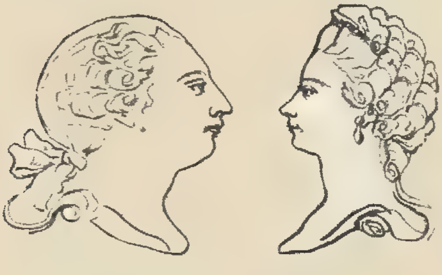
Turn back to a dramatic day some 20 years before the French Revolution. Pierre Jacquet-Droz, Neuchatel theologian and watchmaker, was jolting along in a fashionable coach on the high road winding through the Jura Mountains toward Paris. In a rickety, big-wheeled wagon closely following the coach were three mysterious black boxes, each measuring about six by five feet. Near a wayside inn a group of curious peasants crowded around the strange wagon and inquired about the black boxes.

"The bodies of a young woman and two boys that I myself have created," called out Monsieur Jacquet-Droz with a quick flourish of his hands. "Each can perform

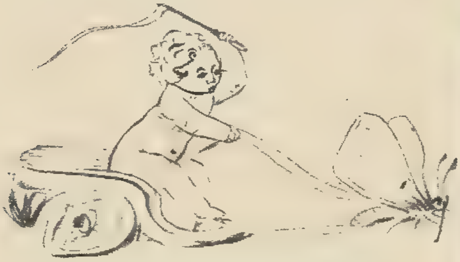


Soyez les
bienvenus
a neuchatel.

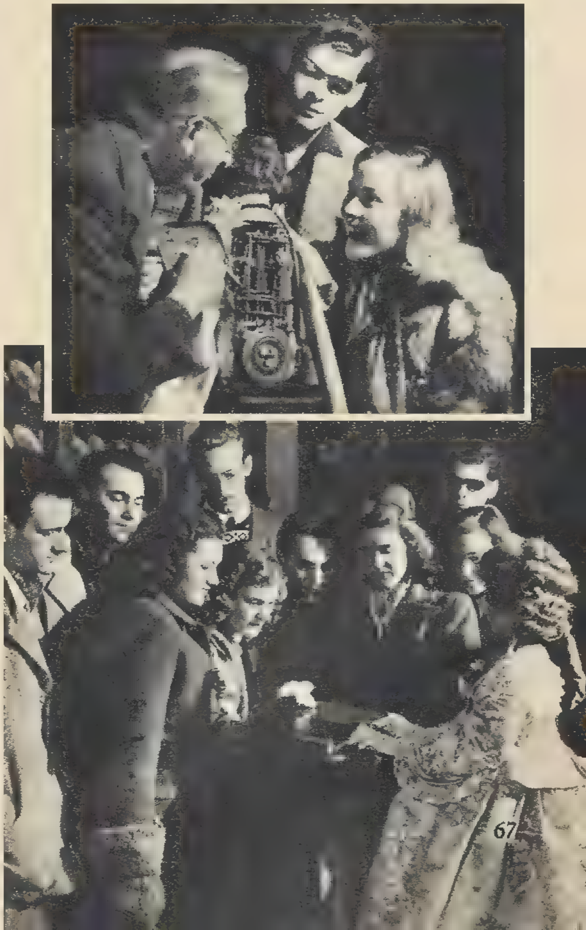
The robot wrote: "Welcome to Neuchatel."



The puppet artist drew this royal sketch.



The robot also did this cute little cupid.



The museum's director, right, lifts up the back of the writer's costume and reveals the clockwork that makes him tick. Below, the robot lad's sister plays a minuet.

wonders when I bring them to life—*which I do at will!*"

If he hadn't added that he was taking his black-box magic to the Royal Court of Louis XVI by special command, the superstitious country folk would have hacked him to pieces with their scythes. Indeed, they threatened to do it, anyway—but M. Jacquet-Droz threw dust in their eyes with his hasty departure.

Before he finally reached Paris with his three black boxes, twice he had to rattle away from inns in the dead of night when friendly innkeepers warned him that bands of peasants were preparing to burn him at the stake.

In Paris, Jacquet-Droz and a secrecy-sworn French assistant unpacked the black boxes at midnight behind locked doors. With great care the watchmaker lifted the two "dead" boys from their coffin boxes, then raised the body of the wistful girl with the exquisite little nose and the supple, tapering fingers.

The awe-struck assistant faltered in his help as the robot creator posed his boys before desks and his girl before a spinet. Then he brushed the children's human hair and touched up the rouge on their life-like cheeks and lips. After adjusting the drape of their costumes, he gently flicked off the dust from their journey. With a spit-moistened finger he redefined the children's eyebrows and reformed the curls at the nape of the young lady's neck.

"Now they are ready to come to life at my bidding!" he muttered as he covered each with a throw of purple damask. When he turned, the assistant had fled. The robot creator smiled.

For all his visions, the Swiss was a shrewd businessman. He had deliberately frightened his assistant. While the master technician ate a sound supper, his terrified former helper was spreading the word through the streets of Paris about the "metaphysicist" who could create living people. Jacquet-Droz had known he, too would. He figured that the publicity would catch up with him by the end of the week. It did.

All the notables in Paris flocked to the opening of his exhibition. Hearsay had turned to genuine belief. Gossip grew hot about what Jacquet-Droz had brought from Switzerland in those three strange black boxes.

"Be careful," a duke of France cautioned his mistress, "lest one of these puppets suddenly forsake his pleasant manners and descend from his stool to attack us."

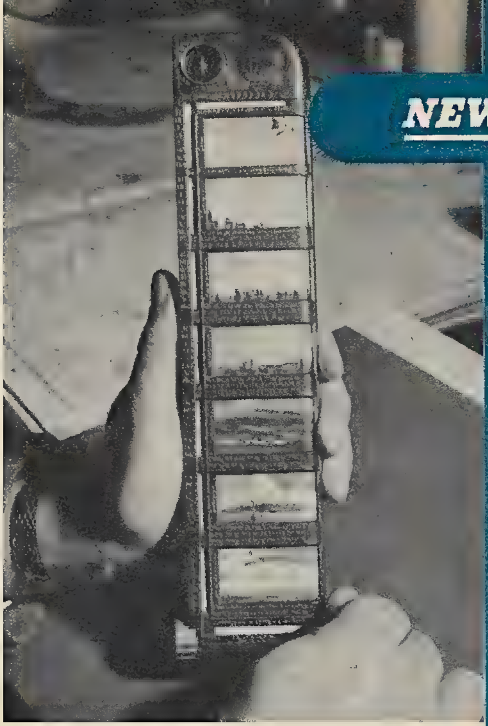
The chance that such a thing *might* happen added the

[*Continued on page* 154]

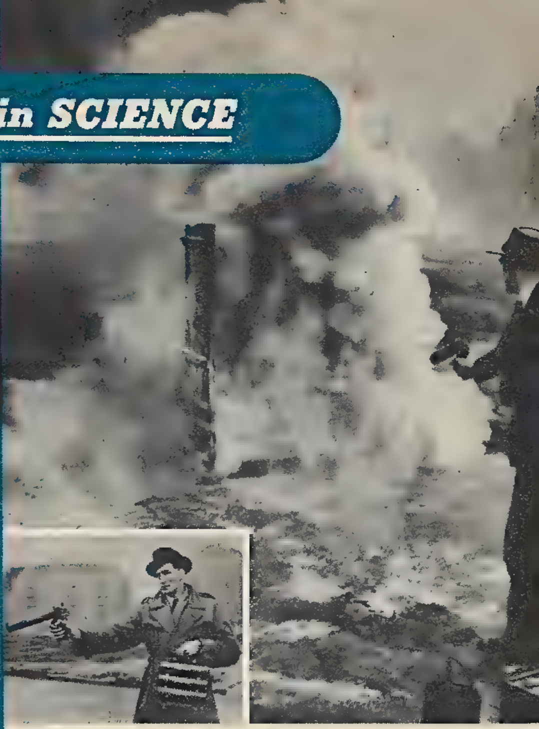
Mac, a Venice, Calif., robot, loves the beauties of the beach but doesn't dare go near the water.

Rupert, Albert Creuziger's mechanical-man Friday, rests after hard day. He pours drinks, too.

NEW in SCIENCE

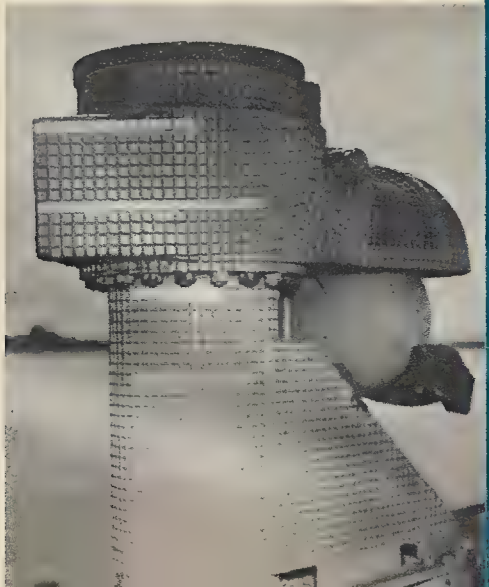


Weather Slipstick is a mechanical weather forecaster which you operate like a slide rule. It has 14 color pictures of cloud formations with associated data below them. First you determine wind direction by compass, then move the indicator alongside photo of clouds you see. Forecast appears in tiny window. Made by Eastman-Kodak.



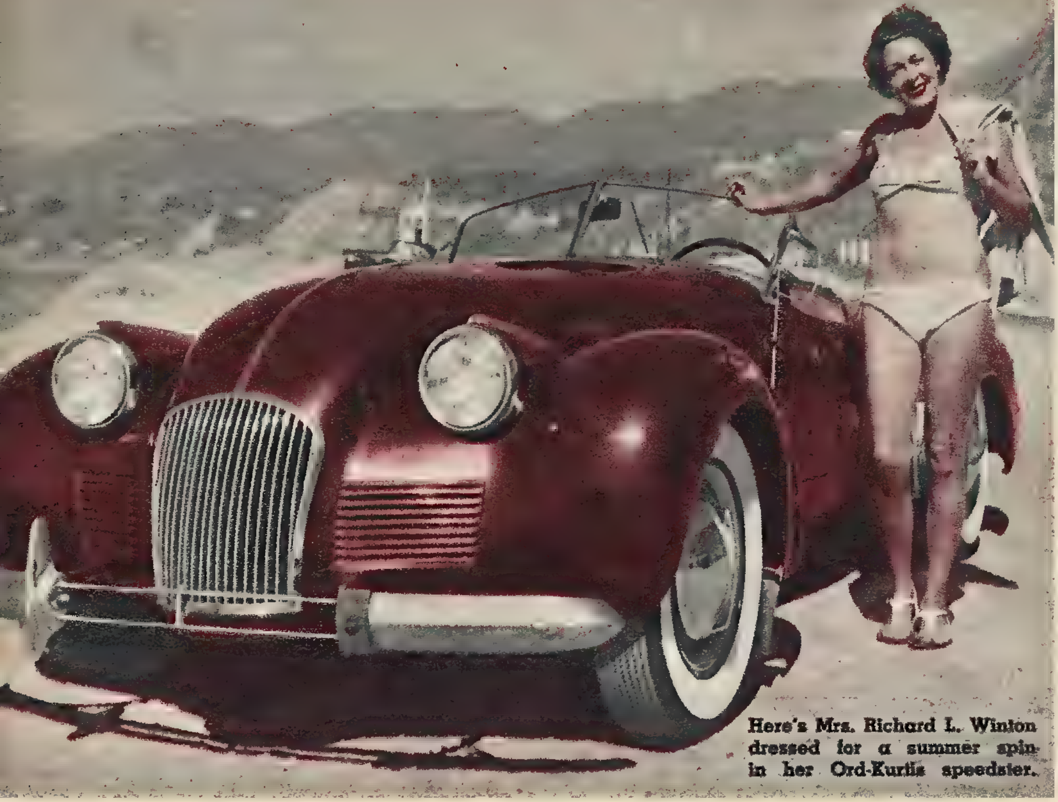
Fire Pistol extinguishes small blazes instantly with a deoxygenating powder charge that travels 25 feet. You aim the gadget at the base of the burning target and the flame is immediately smothered in a cone-shaped cloud. Canisters in the demonstrator's left hand (inset) are refills. It's made in England by Antifyre Ltd., Acton, W. London.

American Snorkel may result from U. S. Navy tests with this German unit used on Nazi U-boats during the war to allow the subs to remain submerged for long periods of time



Battery Heater sends slight current through battery, keeping it warm in winter. Plug into lighter receptacle on dashboard. Called Vitalizer, it's made by the General Electric Corp.

World's Fastest Woman Driver



Here's Mrs. Richard L. Winton dressed for a summer spin in her Ord-Kurtis speedster.

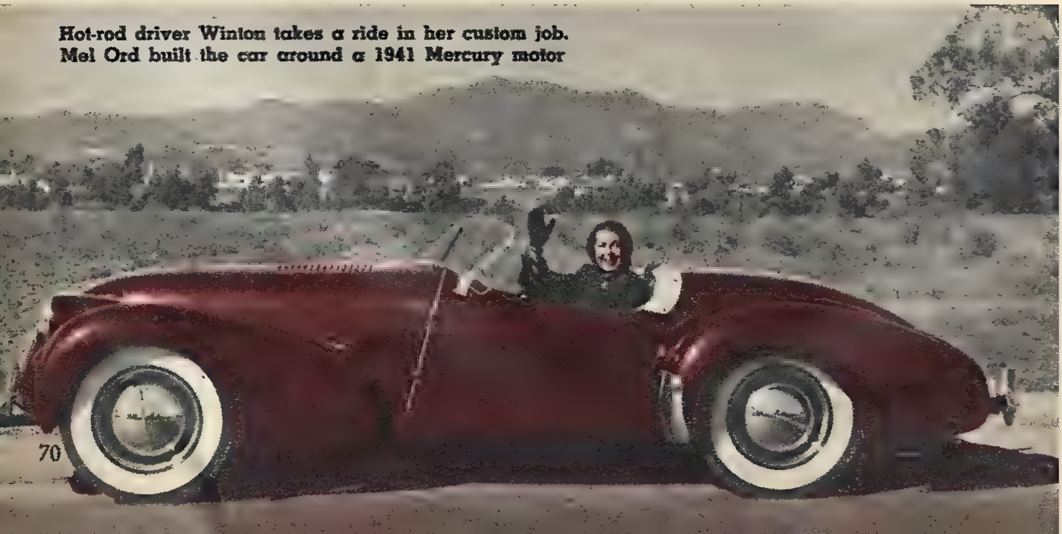
NEXT time you feel the urge to yell "Woman driver" at that car in front of you, think it over. It might be Mrs. Richard L. Winton, one of the world's greatest woman drivers.

In her hot rod, "Drool," the decorative Mrs. Winton (see photo above) has been officially clocked at 126 mph! Her sleek speedster is actually a 1941 Mercury hopped-up by Mel Ord, the famous race-car builder. He also designed the body which Frank Kurtis executed and constructed. Before it was finally completed the model cost over $10,000.

Mrs. Winton, who lives in Santa Monica, Cal., can hold her own with the hottest drivers on the track. And she knows what's going on under the hood, too.

Why did she name the car "Drool?" Because, she says, that's what most people do when they see it whipping along the California highways. •

Hot-rod driver Winton takes a ride in her custom job. Mel Ord built the car around a 1941 Mercury motor



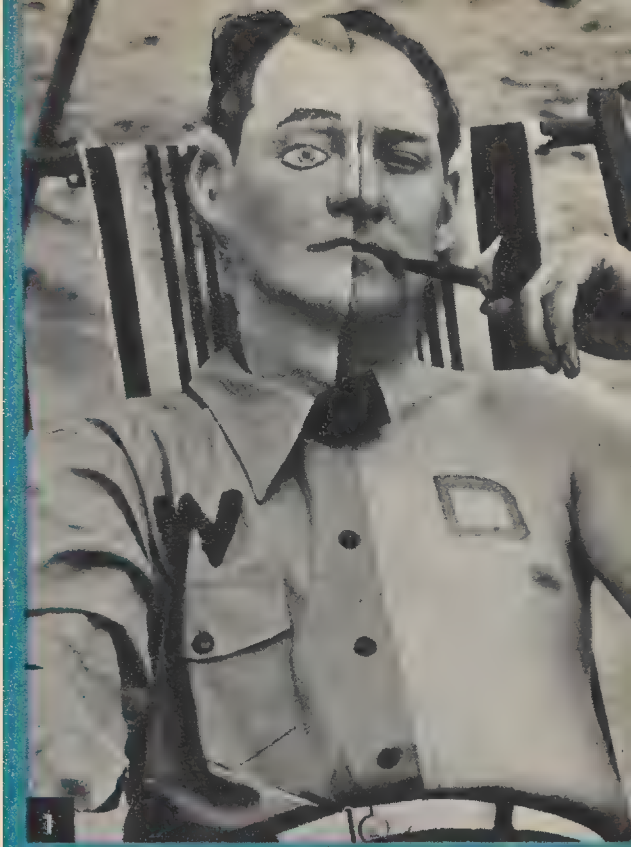
Madman MORAN–Screwball Promoter

THE man is mad! He spends his time on crazy projects like the ones shown in these pictures: (1) Getting half-baked by exposing half his body at a Florida beach to test its sunshine against California's supercolossal rays; (2) personally hatching an ostrich egg; (3) finding a needle in a haystack—he sifted two tons of hay for 82½ hours before he spotted the thing, and (4) riding across a river near Reno in an Uncle Sam outfit to prove that any American *can* change horses in midstream.

"I am a screwball," Jim Moran, Hollywood publicity promoter, admits. And this time he makes sense.

He used to be a "hot" radiator salesman—took him a month to get up steam for a sale. Once he sold an icebox to an Eskimo—after Moran told him an icebox was a great gadget—*to keep food from freezing.*

Moran finally decided he could do his best work lying down—and snoozing. For a $200 fee he'll take any publicity problem and go to sleep on it. Maybe he'll dream up a goofy promotion idea—maybe he'll just goof off. He did sit up to hatch that baby ostrich and got $5000 for this extra effort in promoting the movie, The Egg and I. Moran is mad—mad like a millionaire! •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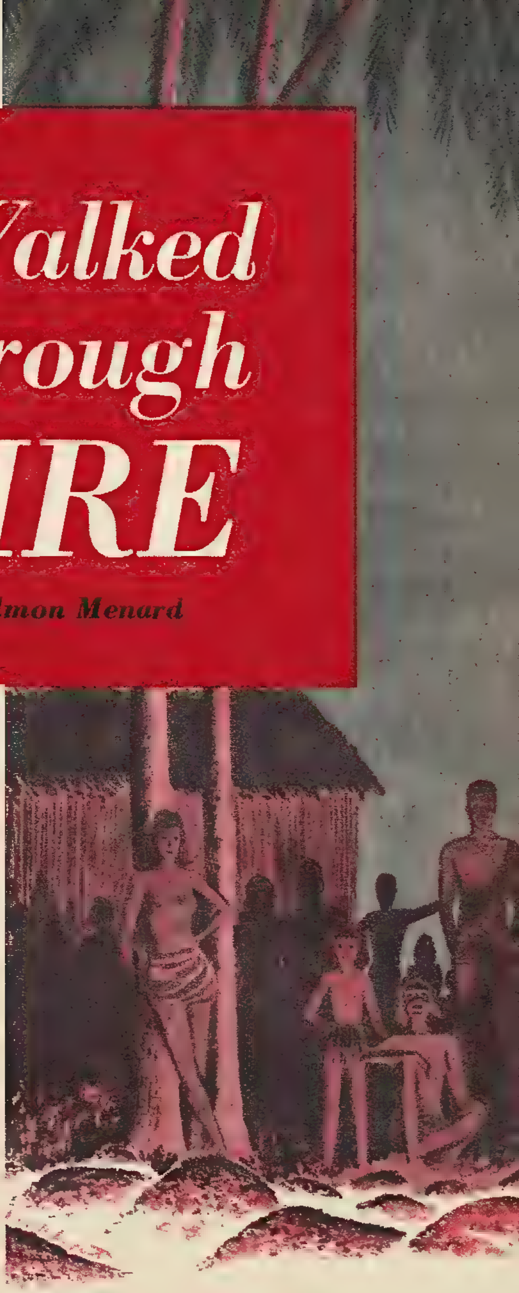
I Walked Through FIRE

By Wilmon Menard



That red-glowing pit on the South Sea island fascinated the author. He never thought he'd be lured into the flames.

"YOU'RE going to be sorry!" shouted one spectator as I kicked off my shoes and stood before the fiery pit.

A moment ago I had been just a sightseer standing among the spectators gathered in a sacred grove on the South Sea island of Raiatea to witness a strange fire-walking ceremony. Now I was feverishly getting ready to walk barefooted through the fire myself.

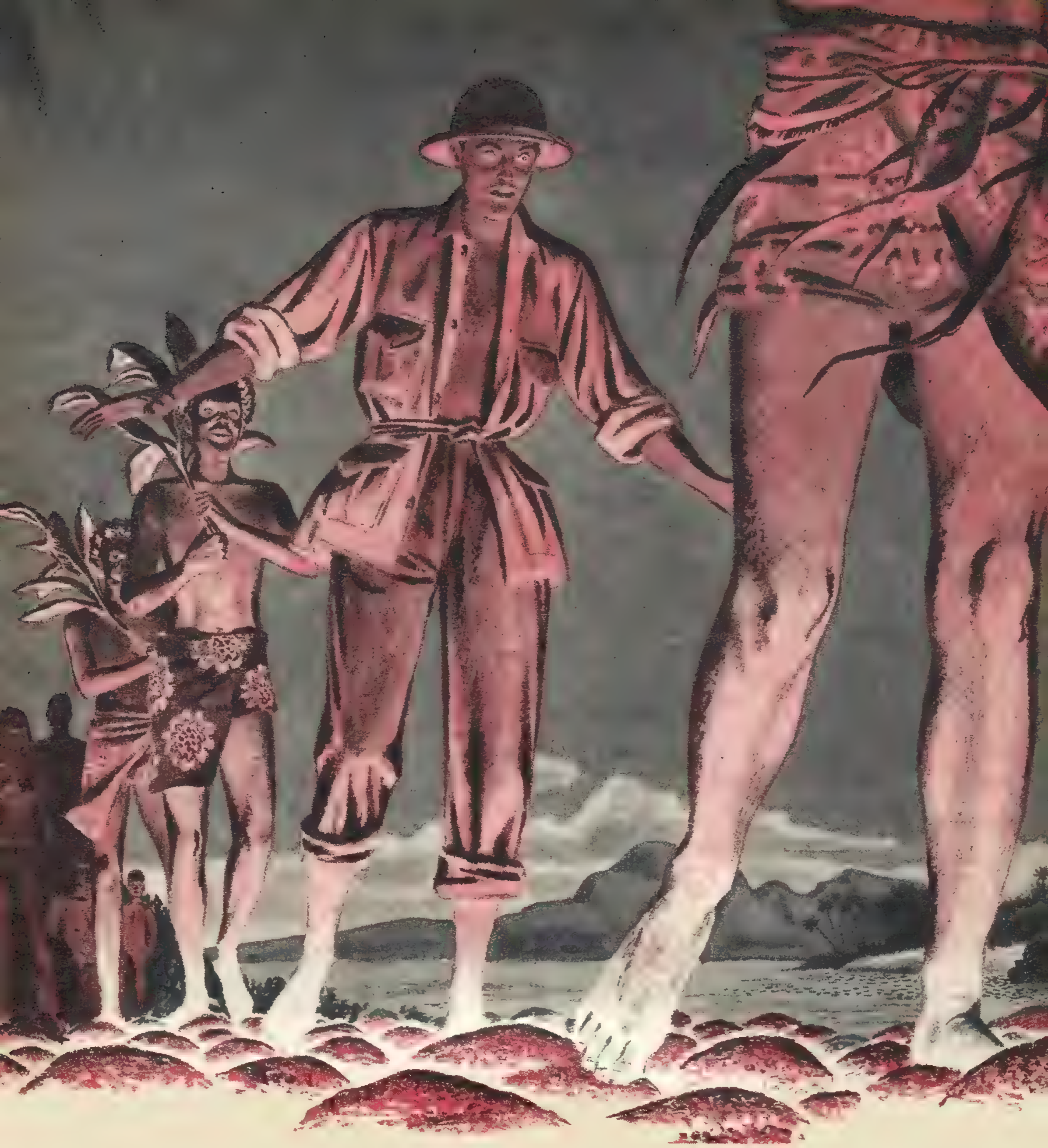
The big rocks in the fire-pit glowed bright red in the faint light of dawn. Now and then the fire tenders, their bodies gleaming with smeared coconut oil, passed briefly between the open furnace and me as they raked out the last of the log cinders and leveled the hot rocks. It looked like a preview of hell.

Here's how I got myself into this hot spot and became a fire-walker:

Even more than the other spectators who had sailed 135 miles from Papeete, Tahiti, I had been intensely interested in every phase of the mysterious *Umuti* (Fire-Walk) of Raiatea. Luckily, the very day I arrived on the island Chief Terii Pa'o, the head fire-walker, called an *Umuti* to honor two great goddesses of ancient days, the Goddess of the Moon and The-Great-Woman-Who-Set-Fire-To-The-Sky.

I wandered beyond the village of Tevaitoa and watched the natives digging the pit—30 feet long, 15 feet wide and 4 feet deep. I saw huge stones rolled into a high mound in the pit and followed the progressive heating of this rock furnace during two entire days.

Then the laughter, singing and loud talking among the spectators stopped. Terii Pa'o, clad in his native loin cloth and decked with garlands of sacred *ti* leaves, was stepping forth from his near-by



coconut palm temple. All eyes stared at the handsome chief as he slowly waved his *ti*-leaf wand and led off the fire-walking procession.

He turned, caught my eye and smiled. Once we had sailed aboard a schooner together to Anaa, an atoll in the Dangerous Archipelago known for its pearl-rich waters. I had presented him with a can of salmon and we had become good friends.

Now the spectators swarmed about Terii Pa'o and closely inspected his feet to see if they had been coated or specially treated to be protected against the intense heat of that rock furnace. He grinned indulgently at their thorough examination.

I saw one of the tourists turn away and walk to the edge of the fiery pit. He gazed at the open furnace for a few seconds. Then, with a groan, he covered his face with his hands and backed off. His neck and face turned scarlet, his eyes glazed and streamed with tears.

Another tourist took a long look and dropped a handkerchief upon the rocks.

Instantly it seared and turned to a gray powder.

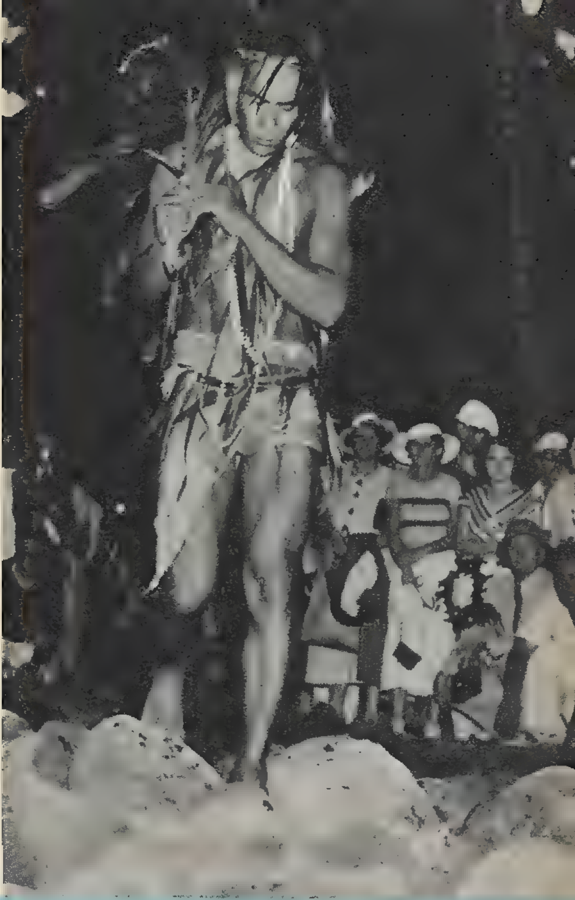
Chief Terii Pa'o, with head high and eyes uplifted to the sky, walked up to the fire-pit with his swaying branch of *ti* leaves. He struck the rocks three times with his *ti* wand, then began chanting the ancient fire-walking prayer. Knowing the Tahitian tongue, I listened closely:

"O being (spirits) who enchant the fire-pit, let it die out for a while! O dark earthworms! O light earthworms! Fresh water and salt water, heat of the fire-pit, darkening of the fire-pit, hold up the footsteps of the walkers and fan the heat of the bed. O cold host, let us linger in the midst of the fire-pit. O Great-Woman-Who-Set-Fire-To-The-Skies, hold the fan and let us go into the fire-pit for a little while!"

Then followed a measured cant of the ten first steps to be made upon the fiery pit. Finally, Terii Pa'o uttered a loud and exultant shout:

"O Great-Woman-Who-Set-Fire-To-The-Sky! All is covered!"

I shall never forget the great sigh and then the hush that followed Terii Pa'o's first step upon the pit. He hesitated a moment, as if to be sure that the stones would not shift under his weight. Then, proudly he walked onto the glowing bed of rocks.



Chief Terii Pa'o walks calmly across the burning rocks with his ti branch as the spectators gasp.

A native uses the ancient process of rubbing two pieces of wood together to make fire in the pit.

The tourists gasped. The natives sat stiffly erect, unmoving. They seemed to be in a trance.

Terii Pa'o walked once more across the pit and then turned and recrossed it. His followers formed a line behind him upon his return. Again, Terii struck the stones with the *ti* leaves. Then, followed by a single-file procession of his assistants, he walked with firm steps across the center of the fire-pit.

I could see the heat waves shimmering above their heads, but there was no odor of burning flesh, as I half-expected. They had traversed the pit now, and Terii raised his *ti* leaves, the signal for the column of walkers to face about and march back through the fire.

They walked across the pit three times!

The fire-walkers now follow the chief in a slow, single-file procession across the hot stones in the fire-pit. The author snapped these pictures as he watched the strange rite in Raiatea's sacred grove.

After the third crossing, Terii stopped a short distance from the furnace and cried:

"*Atira!* Enough!"

Then, abruptly he turned and *crawled across the 30-foot expanse of glowing stones on his stomach!*

At the other side of the pit, he stood up and beckoned to the tourists to make their inspection. One of them placed his palm to the soles of Terii's feet and marveled that they were "cold." The feet of the fire-walkers were not even marked by their passage through the burning pit. The examination over, the tourists withdrew, baffled by the miraculous defiance of fire.

Terii then turned to the gaping natives and urged those afflicted with physical or mental pain, needing spiritual purification or wishing to test their courage against fire:

"Follow me across the fire-pit!"

Passing close to me, he caught my eye again and grinned:

"Perhaps you would like to walk behind me? You have lived long in our islands and understand our customs and ceremonies. But, if you are afraid, it would be dangerous to attempt the fire-walk."

It was his challenging remark on my courage that compelled me to risk a walk through the fire and made me kick off my shoes and cry:

"*Haere outou!* Let's go!"

With a show of bravery I didn't feel, I stepped into line behind Terii.

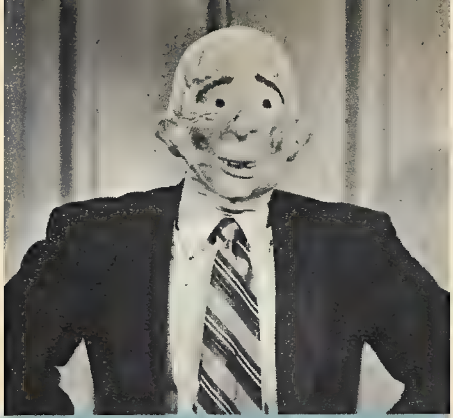
My bravado shrank with every step. I was badly frightened and cursed the impulse that made me accept Terii's challenge to follow him through the fire.

My throat throbbed taut and dry and my stomach felt like a nest of crazy butterflies. My heart hammered violently, my head ached.

I've always had a fear of fire and now I shuddered as I stared with nightmarish fascination at the searing fire-pit ahead. I no longer cared what Terii and all those spectators might say—I wanted to bolt.

But the priest [*Continued on page* 153]

NEW in SCIENCE

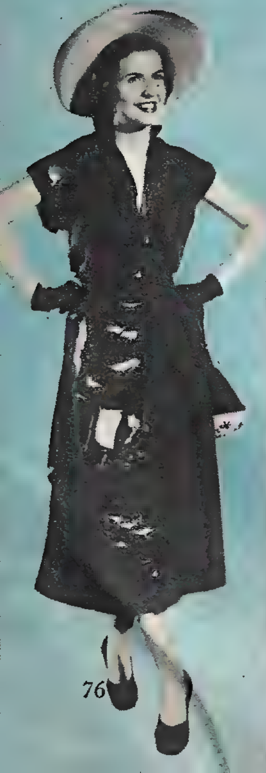


False Faces of rubber fit over your head. While wearing one you can see, hear, talk and even smoke. Rubber for Molds, Chicago.

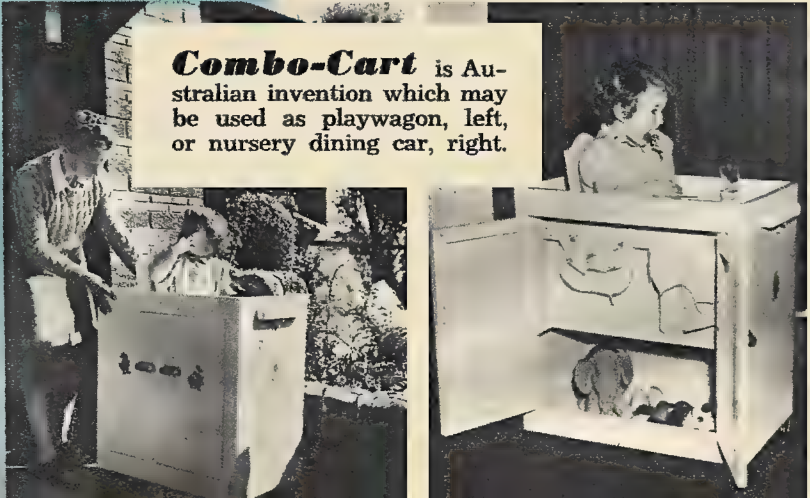
Ping-Pong Gun fires balls noisily at a terrific rate of speed by using air pressure. Newell Mfg. Company, Lowell, Mich.

PUSH
FOR
SERVICE

Service Please! Push button on ashtray, and light signals waitress. Service Ideas, Minneapolis.



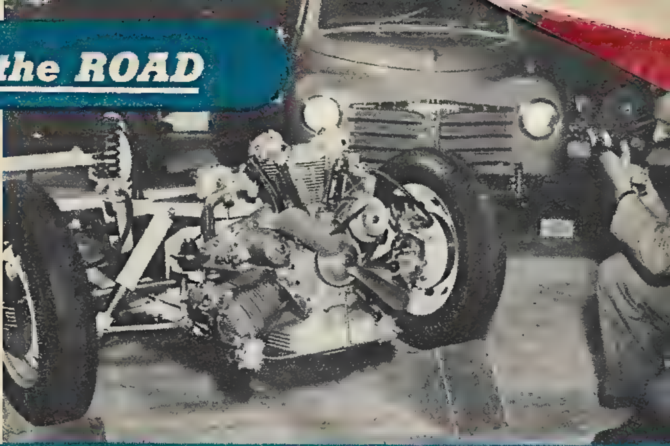
32 Washes did this to milady's dress. Ordinary starch was used on left side while new Perma Starch was used on right, doubling life of cotton. U. S. Rubber Co., N. Y. C.



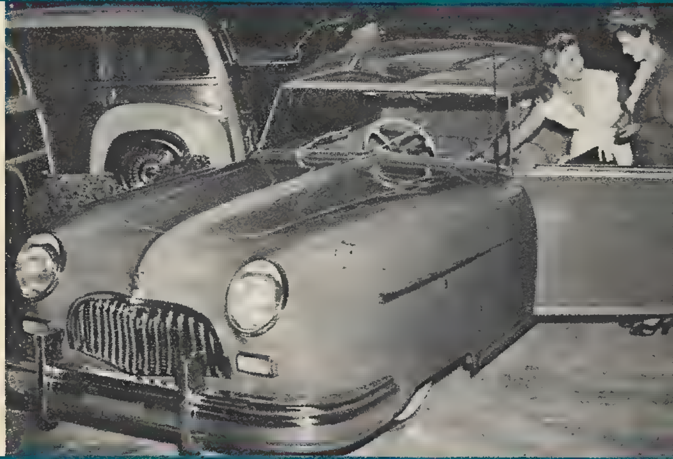
Combo-Cart is Australian invention which may be used as playwagon, left, or nursery dining car, right.

NEW on the ROAD

Turin "Opes" is Italy's latest 'ope for attracting the Yankee dollar. It's a little five-seater with an 800-cc, air-cooled engine and front-wheel drive. The tiny car makes about 35 miles per gallon at a top speed of 65 mph. In foreground is radial engine; background, the smartly-designed body.

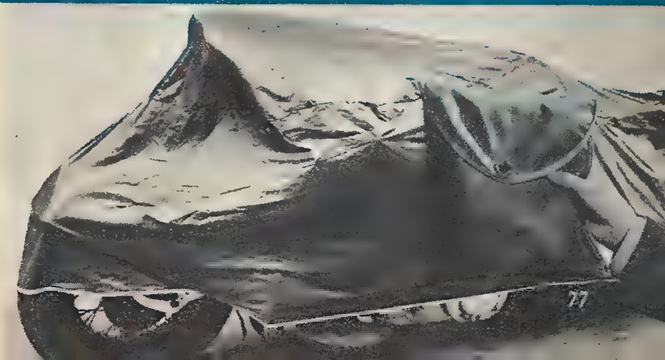


4,000,000 Lire will buy you this unusual Italian Fusi-Ferro. In dollars, that's a mere $7000. The eight-cylinder, 1100-cc car makes 90 mph. It's strictly a luxury liner and its manufacturers have accordingly provided it with lavish fittings. Note the front wheel guards, the custom-built upholstery, central steering wheel, streamlined body and plastic roof for star-gazing.



Gas Protector safeguards your fuel supply from tampering. It's an electric lock which eliminates bothersome keys by featuring pushbutton control from the dashboard. Made to fit any standard model car, the gadget won't be hampered by snow or ice. Push the control, left, and the fender door lifts automatically, right. Steele Mfg. Company, 445 Winchester Ave., Ashland, Ky.

Cycle Raintog solves the old problem of weathering and rusting of your stored motorcycle. The waterproof nylon cover fits snugly around the machine and is tied by straps. When not in use, it fits into a sack which slides into your saddle bag. Cycle Weather Pack Company, Flushing, N. Y.



FRANK
INSLEY

Apples As Big

Scientists are working frantically to produce monster plants in order to feed the world. You can try their wonder drug in your own garden.

As Your Head!

By Donald G. Cooley

HOW'D you like to step out into your backyard and pick a two-pound apple? Or a strawberry as large as a peach? Perhaps you'd prefer to grow roses the size of dahlias. Or, the prospect of biting into an exotic new fruit or vegetable—a pomato or a cucaloupe—might appeal to you.

There's nothing fantastic about the creation of utterly new, bigger, more flavorsome and nutritious plant foods. Nature is creating them all the time. The trouble is that nature has all the time in the world and if she takes a few million years to turn out a new kind of peach tree it's nothing to her.

In an ever-hungry world, nature needs to be given a hotfoot. Evolution must be given better pickup, quicker getaway. And our plant scientists are learning how to do it.

Everything you eat is the end result of evolutionary changes that are still going on as they have for billions of years. Our cereal foods are descendants of plain wild grasses. The Romans, who were supposed to be fabulous banqueters, knew nothing of potatoes, tomatoes, corn or grapefruit. They lived mostly on wheat, olives, grapes, dates, seafoods and now and then humming-bird tongues for variety. Some day our present diet may seem as monotonous as the Romans'.

The secret of evolution is locked up in germ-cells of plants and animals, inside the thread-like particles known as chromosomes. Man has finally reached the stage where he is able to effect some wonderful changes in plant chromosomes by relatively simple chemical means. Plant hormones, which stimulate growth and hasten ripening, have proved successful in many instances. And a drug called colchicine shows great promise of opening fantastic paths in plant culture.

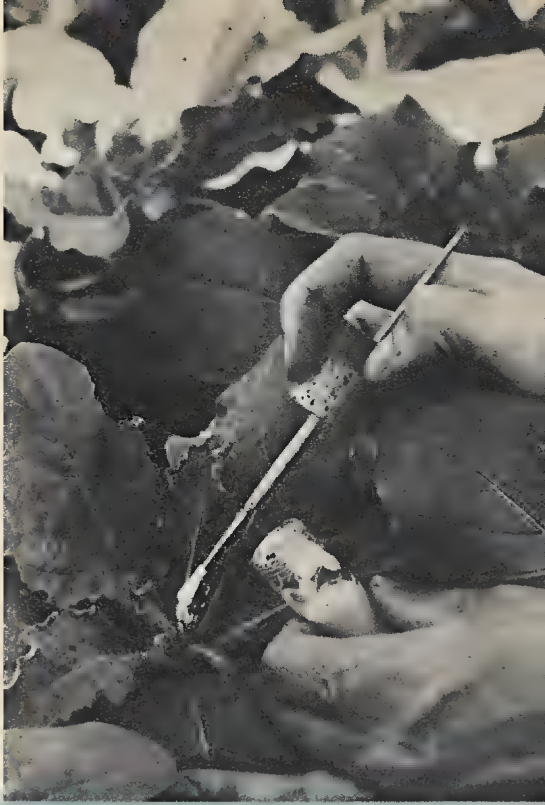
All new varieties of plants or animals arise from some alteration in their chromosomes. Such alterations can occur spontaneously. The yellow Delicious apple was an accident that happened some years ago to an isolated tree in West Virginia. The excited nurseryman who found it built a padlocked wire cage around the tree so its chromosomes would be his alone.

Something happened to the chromosomes of a fox, giving it a silvery fur of great beauty. The fabulously expensive fur known as platina is produced by descendants of that fox.

Employees of seedsman David Burpee sniffed seven million marigold plants before they found one free from the pungent odor some people find objectionable. A whole race of odorless marigolds has been bred from the smellproof chromosomes of this parent.

You have as good a chance as anybody of discovering a new oddity that nature chooses to hang upon some plant. Your own garden may produce a plant so superior to old varieties that plant breeders will pay a good sum for it. You may observe some

King-size cabbages like this will be common sights if scientists succeed in their plant evolution work.



Painting the growing points of plants with colchicine solution is one method of speeding growth.

shrub of astounding new virtue while walking through the woods.

It must be admitted, though, that your chances are less than one in a million. That's why science has been hunting so frantically for artificial methods that'll do the trick. Colchicine has proved to be one of the most effective methods of giving plant chromosomes a shot in the arm.

Prepared from the roots of the autumn crocus, colchicine is an old drug once used for relieving gout. It has the astonishing ability of preventing division of chromosomes in germ cells, yet of leaving the hereditary factors intact. It results in the number of chromosomes in colchicine-treated plants being doubled. This hopped-up heredity often leads to giant growth.

Even more important, colchicine frequently enables plant hybrids to become capable of reproducing themselves whereas crosses between species are usually sterile.

Seed catalogs list several varieties of colchicine-produced flowers that are bigger and sturdier than their parents. Thousands of home gardeners have raised them successfully. But scientists are more concerned about food crops. Since 1937, when Dr. Albert F. Blakeslee and Amos G. Avery described their work with colchicine, large-scale experiments have been continuous. The aim is not merely giant size, but increased yield of specific plant products—more oil from soybeans, more latex from Russian dandelions and more resins from faster-growing trees.

Colchicine treatment is simple enough to be within the range of any intelligent gardener. Don't expect to create a football-sized potato immediately, however. But your experiments with the drug will be rewarding and thrilling.

The drug is listed in the U. S. Pharmacopeia as colchicine alkaloid amorphus. It's a yellowish powder, extremely poisonous. Great care must be taken not to get it on the skin or in the eyes as it can be very destructive.

The drug sells for about $25 an ounce but an eighth of an ounce will be enough for many experiments. Water solutions of 0.1 per cent and 0.4 per cent are the strengths most commonly used and a one or 2-per cent mixture of colchicine in lanolin gives a paste for direct application to growing tissue. There are no fixed dosages for plants; the general rule is that too-strong applications prevent growth, too-weak

Burpee worker sprays young snapdragons with colchicine solution to create outstanding new varieties.

Here's a 32-pound turnip that dwarfs a 3-year-old child. Will all turnips in the future be this size?

ones merely daze the plant. One of the simplest methods of application is to soak seeds in colchicine solution between four and ten days, trying both weak and strong solutions. Use a very shallow dish so the seeds can get oxygen. Another way is to dig up seedlings when they reach the two-leaf stage, tie them gently into bundles and immerse them top down in a dish containing colchicine solution for from four to 24 hours. Keep the roots moist and set the seedlings into flats immediately after treatment.

A camel's hair brush can be used to apply colchicine solution in its weaker strength to tip buds of larger plants. This should be repeated several times at short intervals. A drop of the solution can be placed on the growing tip of seedlings three or four times at about six-hour intervals. Daubing on a single application of the stronger lanolin paste may do as well. Water solutions sprayed on by a fine atomizer can also be used.

You'll probably have a problem recognizing what you've got when you finally get it. Plants in which your chemical wizardry has taken, will probably disappoint you by their misshapen, unattractive appearance. Plant tissue poisoned by colchicine grows at a different rate from ordinary tissue. As the plant recovers, it looks pretty much like any other organism shaking off a hangover: generally undesirable. Often it'll have rough, crumpled leaves, thicker stems and greater height. The real benefits of doubling the chromosomes won't show up until the next generation.

With colchicine you might even be able to double the speed of growth of young shrubs and trees around your house. Nurseries calculate that their stock doubles in value with each year's growth. So, if you can grow a 20-year-old oak tree in ten years, you have a tidy profit in your front yard.

Professor Earl H. Newcomer of the University of North Carolina doubled the growth speed of young oaks and chestnut trees and hazelnut bushes. He placed one drop of 0.4 per cent colchicine solution on the growing points of the trees each day. Some of the seedlings died, but those that didn't started living really fast lives. Since many of our most important money crops like nuts and fruits come from trees, the commercial importance of a method that would cut the

[*Continued on page* 145]

Which 'Comp' for Your Shotgun?

Every single-barrel job should have a compensator, says this gun expert. Here's the selection: take your pick!

By Raymond Camp
Gun Editor, New York Times

IF you have a single-barrel repeating shotgun and it isn't equipped with a patent choking gadget or compensator, you're missing a lot of good shooting!

Why? Because one of these attachments can convert it into an all-range gun and will increase its killing power. It will enable you to knock down quail at 20 yards as well as ducks at 50—and that's a trick you can't perform with the old blunderbuss right now. Moreover, most of them will cut down your recoil almost 20 per cent, a blessing for the guy who does a lot of shooting.

If you have any doubt that the patent choke can produce consistently better patterns, attend one of the regional or national skeet matches. There you'll find the majority of shooters using pumps or autoloaders, and almost every one of them is equipped with one of these contrivances. It has been argued that the increased weight at the muzzle, caused by the choke, tends to upset the perfectly balanced gun. This isn't so. When a compensator is installed on your gun, two to four inches are sawed off the end of the barrel to allow for the added weight; thus the gun retains its proper balance.

Some of the critics of the patent choke claim that while it may be satisfactory for a light upland gun, it causes extra-heavy recoil when maximum loads are used—in a duck blind, for example. This is only partially true, depending upon the type of choke-compensator you select. If your light gun has merely a patent choke, the use of heavy loads does result in greater recoil. However, equip the same gun with a compensator, and the recoil with heavy loads will be about the same as that of the un-compensated gun with standard loads.

Young Duke Bratton of Council Grove, Kans., swings his comp on a bird at the national skeet shoot.

We've tossed around the words, *patent choke* and *compensator* quite a bit; here's their explanation for those of you who don't already know how they work.

The choke is a short, slotted tube which fits permanently over the muzzle end of your gun barrel. A sleeve is threaded to the outside. As this sleeve is turned and tightened by hand, the slotted tube is compressed, narrowing the muzzle opening and thus "choking" it.

The compensator, or comp, is so called because it compensates in part for the recoil of the gun. It is a ventilated sleeve fastened to the muzzle. At its extremity you can interchange tubes of various chokes quickly with a simple wrench. In action it allows the gases to escape through the ventilating ports before the shot reaches the choke tube, [*Continued on page* 84]

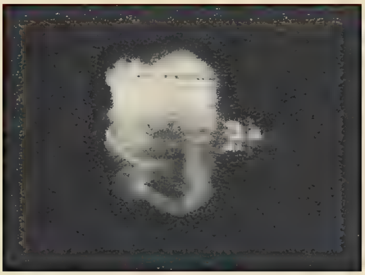
Top photo courtesy National Skeet Shooting Assoc.
Other photos courtesy National Rifleman

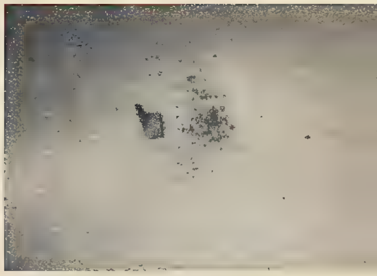
HERE'S HOW COMPENSATORS WORK

PLAIN BARREL

Skeet Choke

Remington Model 31 with Skeet choke. 47% of shot were placed in 20-inch circle at 20 yards.



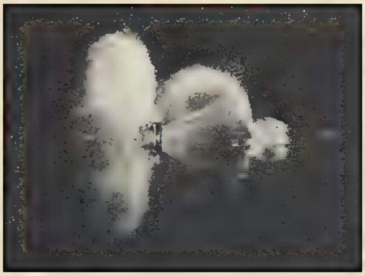


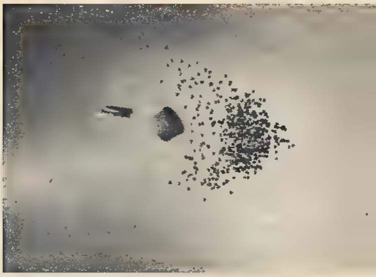
MUZZLE **10 FEET**

VENTILATED POLY

$18.75

Choke is obtained by turning sleeve. Vents turn, too. At same target as above, pattern was 64%.

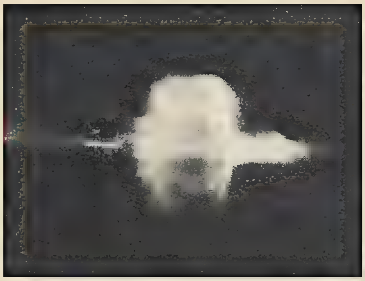




POLY-CHOKE

$14.75

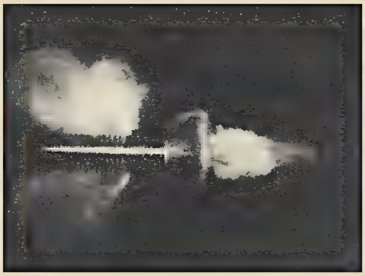
Simple variable choke—no recoil reducing sleeve. Is adjusted like Ventilated Poly. Pattern was 60%.

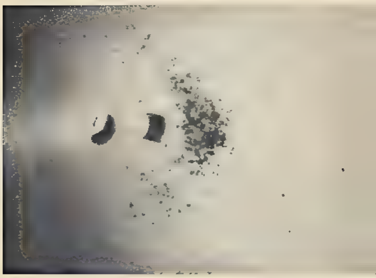


CUTTS COMP

$17.85 (1 tube)

Choke tube at forward end is replaceable. Photo shows Spreader tube attached. Pattern was 50%.

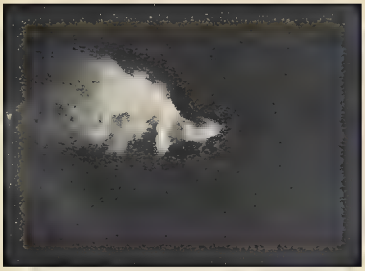


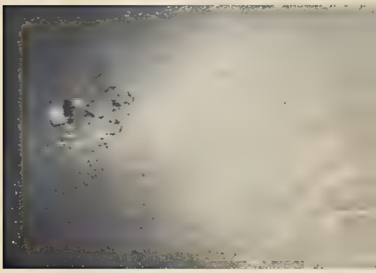


POWER-PAC

$22 (with tubes)

Tubes fasten at end, screw back into ventilated sleeve. Vents are not symmetrical. Pattern was 46%.

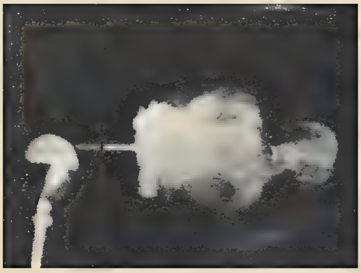


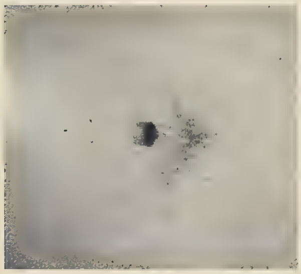


TURN PAGE

ENNIS AIDER
$20 (with tubes)

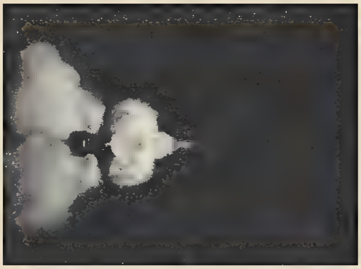
Two tubes are interchangeable by hand. Without tubes, barrel is Skeet choke. Pattern was 46%.

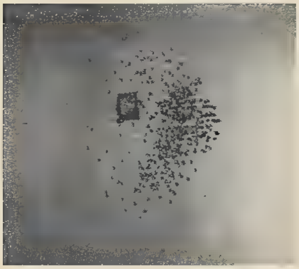




WEAVER
$13.75 (2 tubes)

Small, evenly-spaced gas holes are not as effective as slots. Tubes at front. Pattern was 47%.





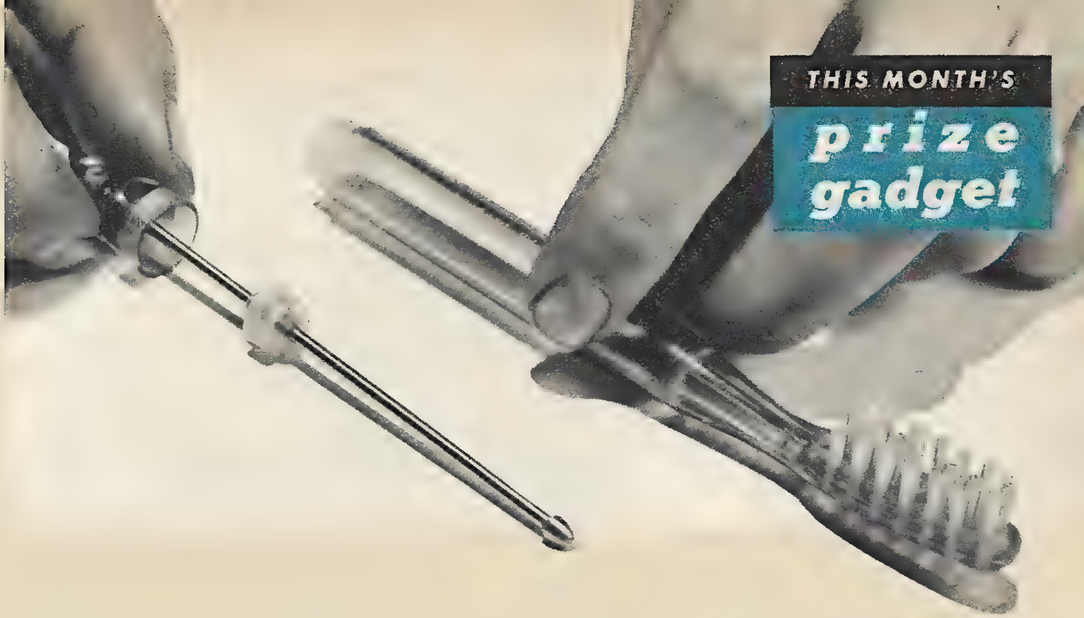
thus preventing pattern distortion. Moreover the forward rush of gases striking the ports pushes the barrel forward, counteracting some of the recoil.

There are several of these devices on the market and while all of them will improve your gun, some are better than others. I have tried most of them from the standpoint of a bird hunter rather than a skeet shooter, and I've studied their patterns at various ranges. My preferences may not coincide exactly with the results of tests conducted by the National Rifle Association (photos shown on these pages), but here they are.

The three best are the Ventilated Poly-Choke, the Cutts Compensator and the Power-Pac. The first gives the best pattern, the last offers the greatest reduction in recoil, and the Cutts is a compromise between the two; its pattern isn't quite as good as the Poly and its recoil is a bit heavier than the Power-Pac.

Ventilated Poly-Choke is a choke and compensator, offering all degrees of choke from cylinder to extreme full. Any degree of choke desired may be obtained in a second by merely twisting the sleeve, which increases or decreases the constriction at the muzzle. The compensator attachment reduces recoil approximately 15 per cent. I rather favor this over the others, despite the slight additional recoil, primarily because the pattern tests with the device were from 10 to 20 per cent better than those of other makes, and [*Continued on page* 151]

NRA's testing setup. All chokes were set at Skeet except the Polys. Photos were timed by impact of sound on mike. Below, pendulum swing to test recoil.



THIS MONTH'S
prize gadget

Paste-Pump Toothbrush

A MISSING tube of toothpaste helped Dr. L. E. Walker, a Mullen, Neb., dentist, invent a toothbrush that always had the paste handy—packed right in the handle.

Dr. Walker's office was full of professional equipment for taking care of other people's aching teeth. At home, though, it was another story. When he had to clean his own grinders, he found his toothbrush all right—but where was that wandering tube of paste?

After fretting over his toothpaste trouble a while, he remembered his hypodermic syringes at the office and figured he might use that hypodermic idea to combine his toothbrush and paste into a single unit. He sold two of his mechanical-minded friends on the scheme. Together they perfected a paste-pump toothbrush and formed the Holiday Manufacturing Co., in Grand Island, Neb., to market the gadget.

Because Dr. Walker lost his toothpaste, now he's turning out a streamlined two-in-one toothbrush and collecting a $50 check from MI for his prize-winning idea. •

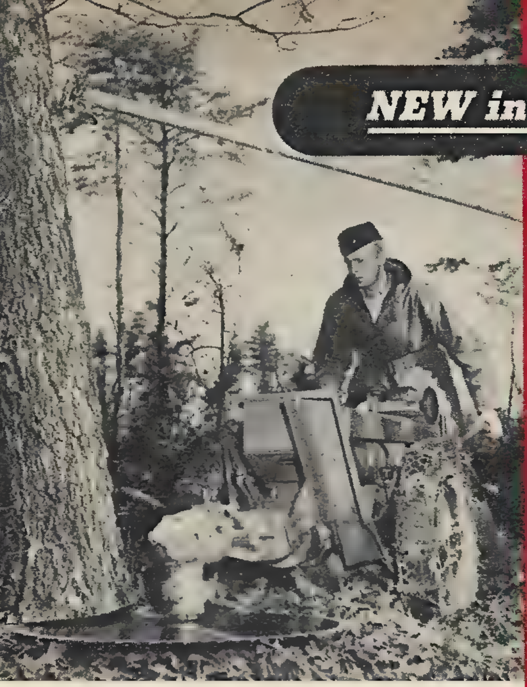
WIN $50

Dreamed up a neat gadget? If you're pretty keen about that pet project of yours, get busy and work it out in your shop. Then send pictures and a description of your invention to Gadget Editor, MECHANIX ILLUSTRATED, 67 West 44th Street, New York 18, N. Y. Each month the best entry, in the opinion of MI's editors, will be awarded a cash prize of $50.

Fountain Flow

Dr. Walker tests the plunger on his new toothbrush, which he sells by the name Fountain Flow. One stroke squirts the right amount of paste or liquid on the brush. Pump is airtight, holds enough paste for 30 brushings.

NEW in SCIENCE



Mechanical Forester will cut 40-inch trees flush to the ground faster than several crews of men with logging tools. It's a two-wheeled, self-propelled tractor being tested by Marines for clearing wooded areas.

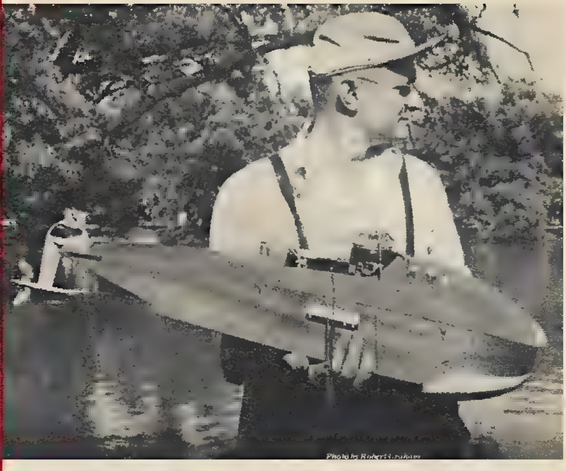
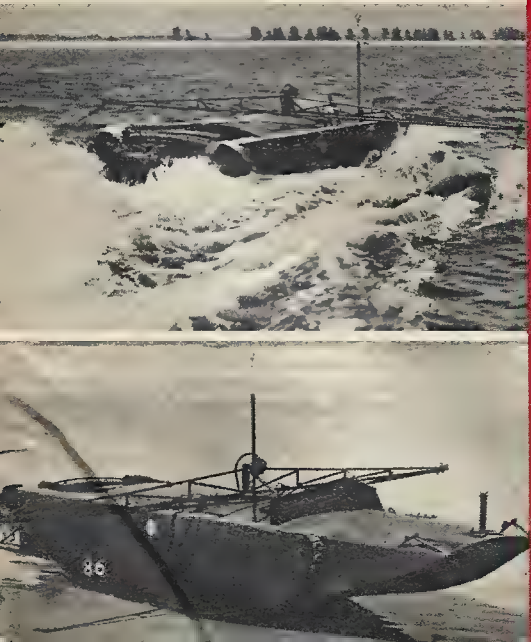


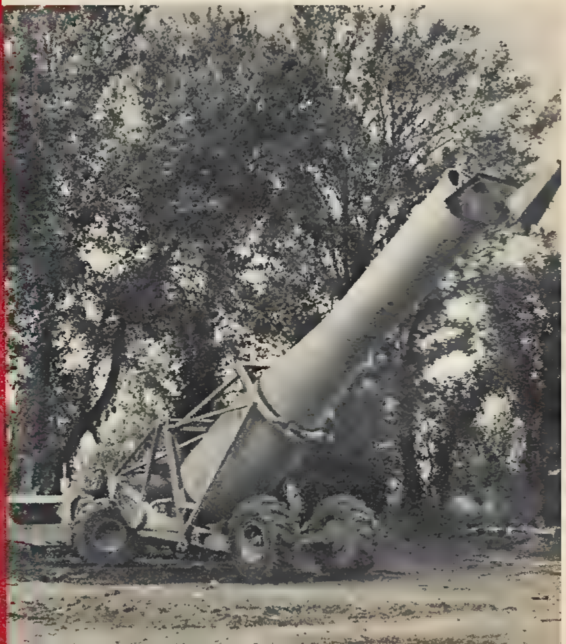
Photo by Robert Graham

Fastest Model is this 30-inch speedboat which was officially timed at 80.36 mph. Built by Ed Kalfus of Poughkeepsie, N. Y., the two-hp model is made of plywood and runs on a mixture of alcohol and castor oil.

Navy Salamander is a radio-controlled, land-sea sled capable of carrying 1200 pounds of explosives. This "X-craft" is directed from the water toward the beach where it explodes among enemy land defences.



Cement Gun can elevate barrel and discharge concrete at height of 20 feet. One man operates the mixer simply by pushing buttons. Contractors say the $25,000 machine does three days' work in less than three hours.

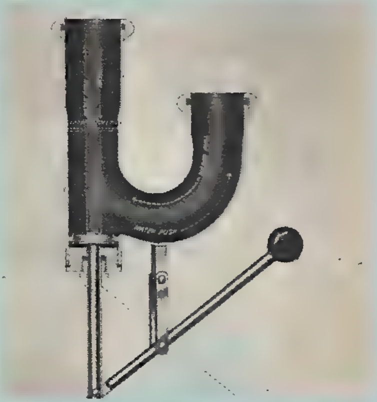


NEW for the HOME

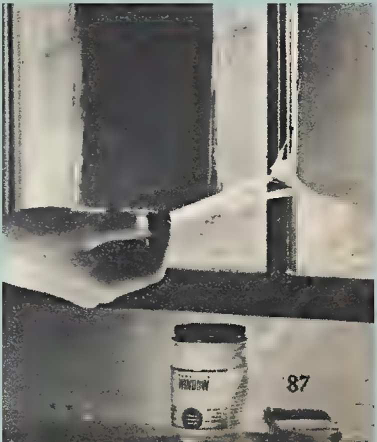
Plastic Gloves protect dainty hands from dishwater ugliness. The transparent, lightweight mittens fit on either hand and remain unaffected by grease or acids. And they slip on or off easier than rubber gloves. Servette Corp., 595 Madison Ave., New York, N. Y.

Door Rack is a closet space saver which holds six suits or twelve dresses in the place usually occupied by two suits. You put your clothes on the hanger when it's horizontal and push it up to a vertical position. Nu-Products Co., Long Beach, N. Y.

Drain-King is a built-in gadget that dislodges any obstructions which may form in your sink plumbing. The hydraulic push-pull pump which is part of the trap clears the drain in a matter of seconds. Telmor Products Corp., Chicago, Ill.

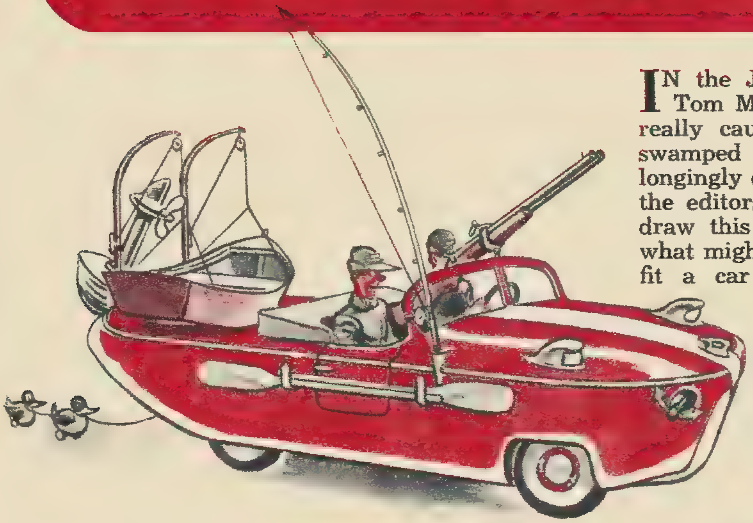


Paint Mask keeps wood, glass and metal clean when your brush slips. This Vinylite shielding solution is brushed on, dries in ten seconds and can be peeled off like tape. Ramsell Prod., Maywood, Ill.



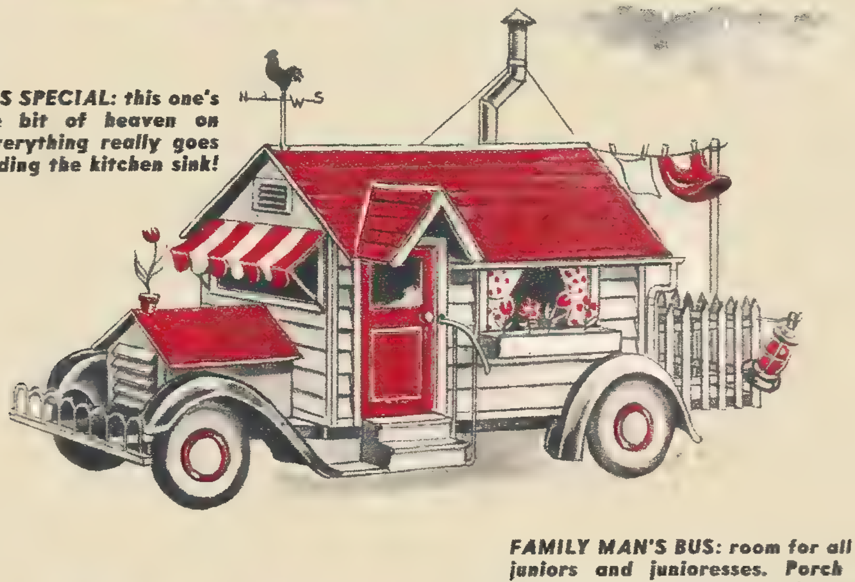
dream cars you'll never

IN the January MI we showed you Tom McCahill's dream car. And it really caught your fancy. We were swamped with letters, many of which longingly described pet dream cars. So, the editors asked artist Doug Rolfe to draw this set of cartoons to illustrate what might happen if Everyman would fit a car to his own personality. •

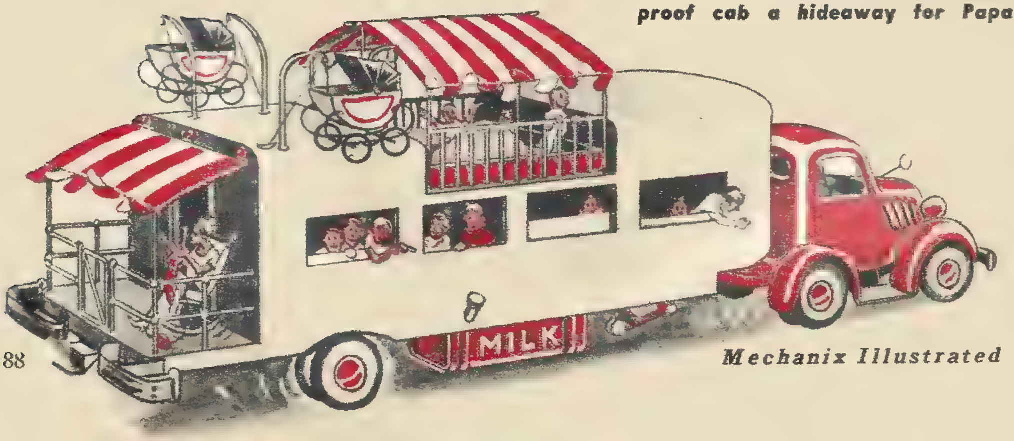


***SPORTSMAN'S MODEL:** good on land and sea. It's equipped with rods, paddles, elephant guns, LaCrosse sticks, fencing masks and cricket bats.*

***HOMEBODY'S SPECIAL:** this one's just a little bit of heaven on the road. Everything really goes along—including the kitchen sink!*

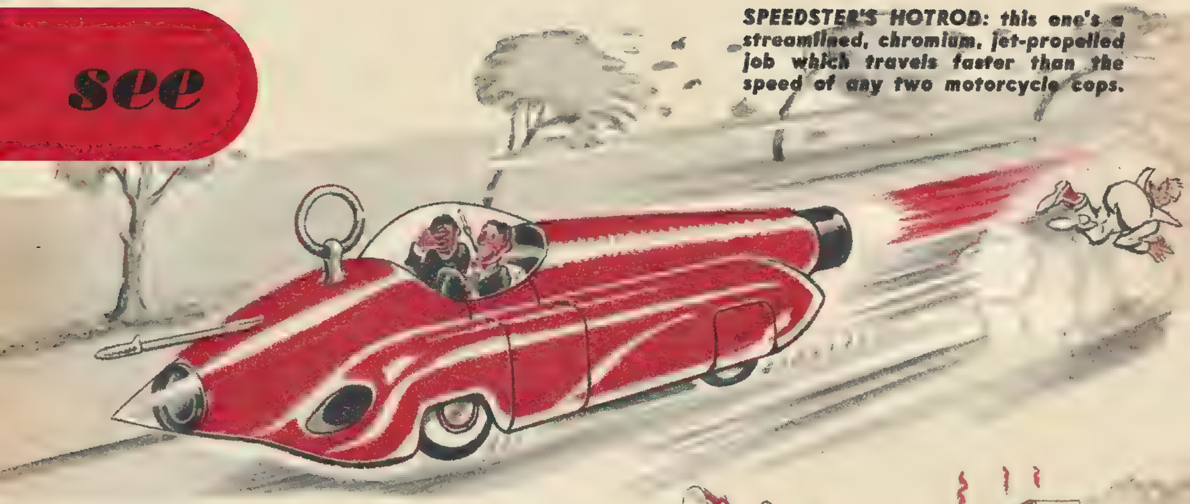


***FAMILY MAN'S BUS:** room for all the juniors and junioresses. Porch far in the rear is for the wife, the soundproof cab a hideaway for Papa.*

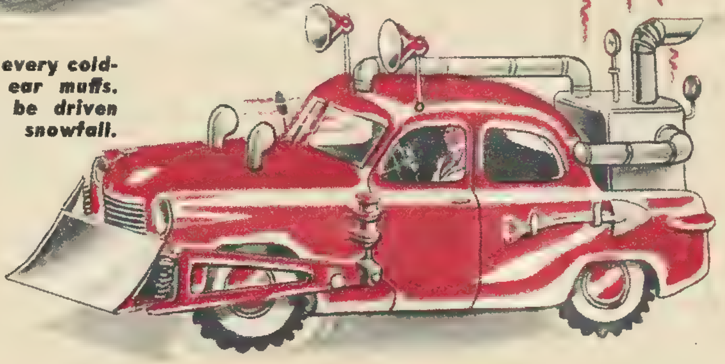


see

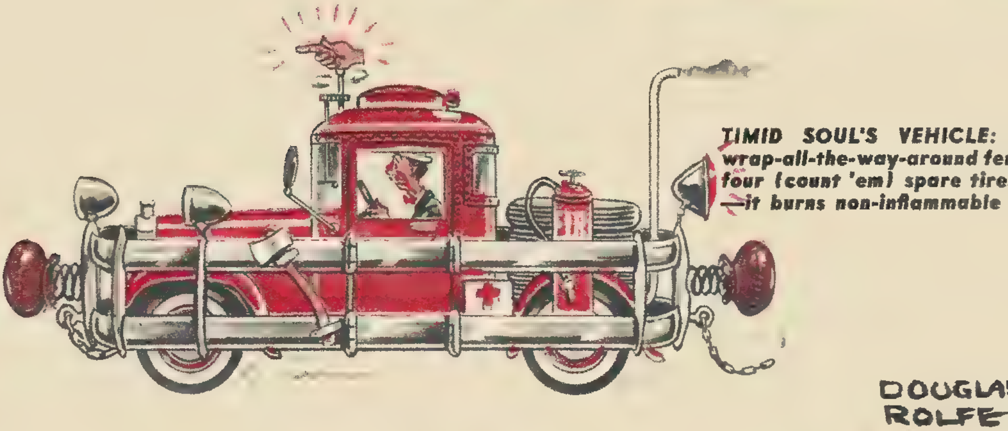
SPEEDSTER'S HOTROD: *this one's a streamlined, chromium, jet-propelled job which travels faster than the speed of any two motorcycle cops.*



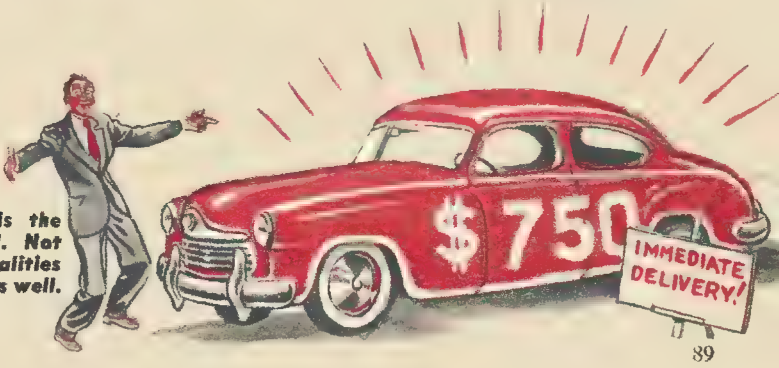
WINTER DRIVER'S CAR: *has every cold-weather accessory except ear muffs. One thing wrong: it can't be driven unless there's a 20-inch snowfall.*



TIMID SOUL'S VEHICLE: *it's got wrap-all-the-way-around fenders and four (count 'em) spare tires. Oh yes —it burns non-inflammable gas, too.*

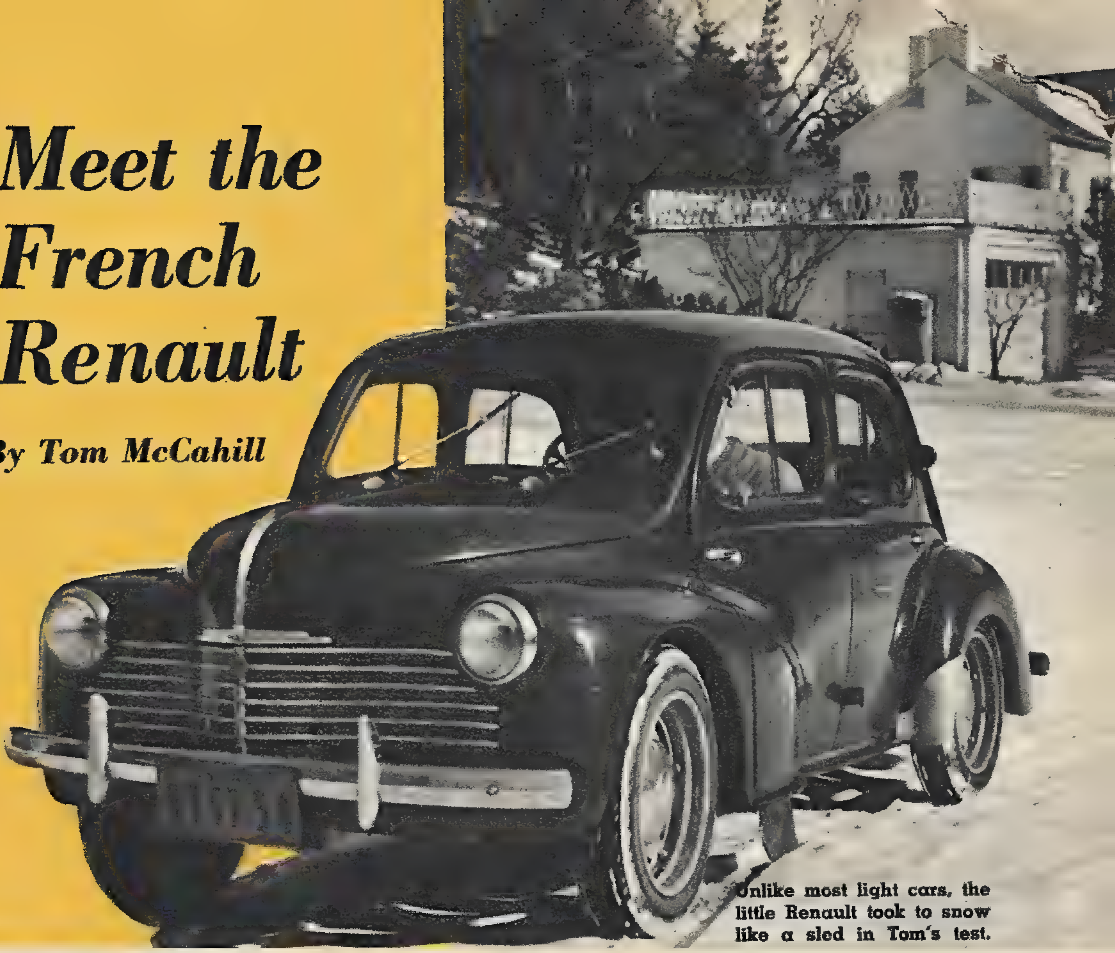


YOURS AND MINE: *this is the most fantastic of 'em all. Not only does it fit our personalities but it fits our pocketbooks as well.*



Meet the French Renault

By Tom McCahill



Unlike most light cars, the little Renault took to snow like a sled in Tom's test.

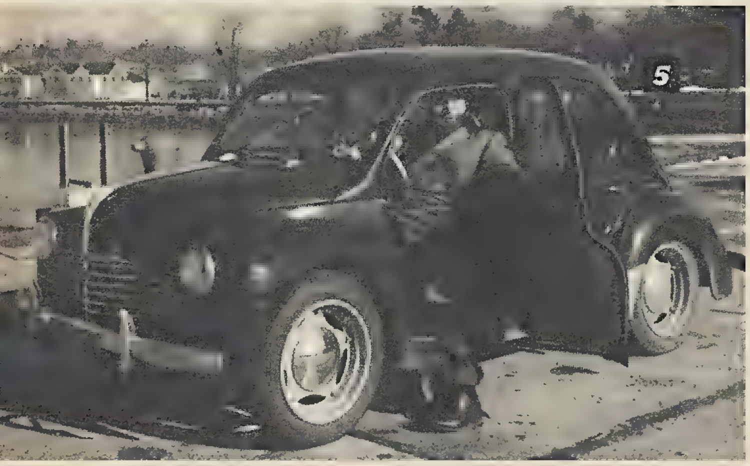
WHEN I squeezed behind the wheel of the new Renault, I felt like Man-Mountain Dean jumping on a Shetland pony for a fast game of polo—only to find polo-pony characteristics which were a real surprise. Even so, the Renault is definitely not made for guys of my displacement.

If you are average size or smaller, then this little rear-engine car from France is something to think seriously about. It sells for $1320, delivered in New York, and gets 50 miles to a gallon of gas. Considering today's general automobile prices, this isn't any worse than paying $2000 for a two-door Ford sedan.

Another way of describing the Renault might be to call it the devalued-franc version of the American Tucker, because of the engine in the rear. This is a four-cylinder, overhead-valve job, that develops only 19 hp. This makes it the least horse-powered automobile being offered anywhere today. But there is a catch to this. The Renault weighs only 1250 pounds. With this ratio of weight to horsepower, it doesn't come off too badly when compared with its natural competitors, the other lightweights such as the Crosley,

McCahill's big Labrador Retriever was more at home in the roomy front-end baggage compartment (1) than he was when he packed himself behind the wheel. Those double slots at the stern (2) ventilate the Renault's rear-end engine. In Picture 3 Tom takes a look at that small but efficient 19-hp motor.

1



Tom tries out the baby Renault for size against his new Ford (4). That low top literally gave him a beating. You can see how he had to jimmy into the car (5) for a head-banging ride.

Hillman Minx, Austin or Ford Prefect. These all weigh from several hundred to a thousand pounds more.

Frankly, in my opinion, the Renault will beat the ears off its competitors in performance, riding comfort and roadability. It has independent springing in all four wheels and rides like a 3000-pound car—*without* the dipsy-doodle characteristics of American cars when their wheels are individually sprung. This little paperweight hugs the road as well as our largest American cars.

When it comes to steering, the Renault is miles ahead of anything we build, including the Cadillac. The little French car has the quick continental steering qualities that make for safe driving—qualities we discarded for our present tire monstrosities, the low-pressure wonders.

The day I made my test run, the ground was covered with snow and ice. This was far from an ideal condition, especially for a lightweight car. Was I surprised! I shot up icy hills and around snow covered turns. Never once was there the slightest suggestion of a skid or wheel spin!

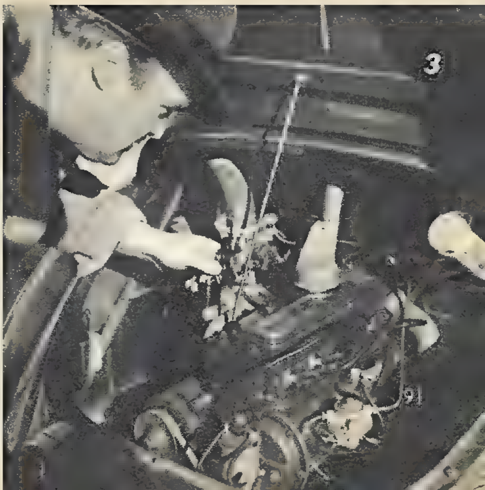
At one point, I was descending a long hill covered with ice and saw, at the bottom, a sharp right-angle turn. I said to Mr. Huber, the company man riding with me, "How about it?"

"Open her up and hit it hard. She'll hold," he answered.

"This goat belongs to you brother, let's go!" I said.

We were doing

[*Continued on page* 160]



A MONEY-MAKING

idea

Crawford grabs up a phone in his office and starts chasing a star.

First, the rush call clears through the switchboard in the phone-filled main office.

Hollywood Star Chaser

Tired of being a fall guy for films, this stunt man got on the phone and called up a fortune.

By Carl Crawford

MAYBE I shouldn't admit it, but I got my big money-making idea right after falling downstairs on my head eight times in a row.

Frankly, I don't recommend such tumbles to anyone seeking inspiration for a novel business venture. I was a stunt man in the movies at the time and took those eight falls downstairs as a professional daredevil.

That afternoon, when I was wearily picking up my battered bones, I heard the director hailing an actor who'd just come on the set:

"Where the devil were *you* this morning, Joe? I had a nice, little part for you—four days' work at 60 bucks a day. But when the studio couldn't find you, I had to get somebody else."

"Where *was* I?" exclaimed Joe. "The only reason you couldn't find me was because I was making the rounds of other studios looking for just such a job!"

While I applied liniment to my aching joints a few hours later, I kept thinking of Joe's hard luck. That sort of thing was happening all the time in Hollywood because the studios so often needed the services of performers on an hour's notice. Several times I had had the same depressing experience myself.

That's when I got my money-making hunch. Now if I could set up an organization to take these emergency calls for actors and actresses—and find the people wanted in a hurry by the studios—I could build up a thriving business.

There were two telephone exchanges in Los Angeles that located doctors in a rush. I thought I could do the same thing for the thousands of actors and other free-lance workers in Hollywood.

I was an easy-going fellow in my early twenties and had knocked around at a number of odd jobs. Besides banging about as a stunt man, I was a movie bit player. I also had my own band, in which I played the piano or a cornet and sang the vocals. Among other things, too, I had fought as a middleweight boxer, under the name of Kit Carson, in semifinal bouts in the local rings.

I gave up all my other work, though, and gambled everything, including my $500 bank account, on my phone-call idea. In the beginning, it would be necessary to devote my entire time to my work. I realized I couldn't get film people as customers if I competed with them as film performer and stunt man.

During the next week I visited every casting office in Hollywood. The response was enthusiastic.

"That's just what our end of the business needs," the casting agents told me. "The people in our offices waste half their time trying to get in touch with actors who aren't home. Anyone who wants to take the job of finding them will have our thanks and wholehearted cooperation."

It looked like a swell deal then. I figured I'd use my home as my business office, especially since my bankroll was too small to set up a new place or to hire anyone to help me. Then, too, the casting offices called actors around the clock, and that meant I had to stick around and be ready for business 24 hours a day. All I needed, I thought, was a telephone switchboard and enough clients to pay expenses during the first few months while I was getting started.

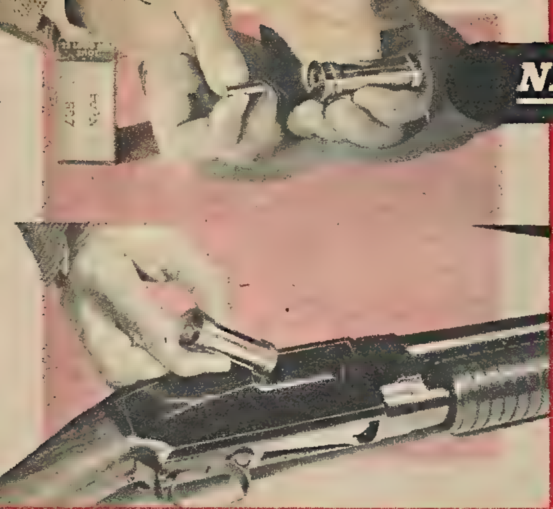
I soon found that I'd been a bit too optimistic. My first setback came when the phone company refused to install a switchboard. [*Continued on page* 156]

"Sorry, nobody here," Director Hall gags as Hope hams.

"No, can't help you this time," Ciro's headwaiter regrets.

Found at last, Paulette Goddard cuts short a beauty bath.

NEW for the SPORTSMAN

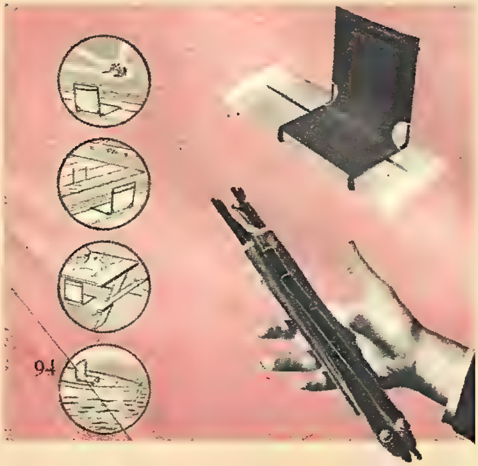


Targeteer cuts the price of target shooting for you. It's a gadget which reduces the gauge of 12, 16 or 20-gauge shotguns for shooting with 22-caliber scatter-shot cartridges. It gives a good pattern of about 100 shot in a 15-inch circle at 30 feet. Adaptable for use in any single or double barrel shotgun, the device is fine for trap, mo-skeet, plinking, target or rodent shooting. P. S. Industries, Wellington, Ohio.

Pocket Stove will solve your camp cooking problems. This collapsible range burns gasoline and is safe. Travelers Equipment Co., Grand Rapids, Michigan.

Washable Fish Bag doesn't hold those nasty, fishy odors. It's made of new durable Lumite woven-plastic mesh. Bertley Company, Pompton Lakes, N. J.

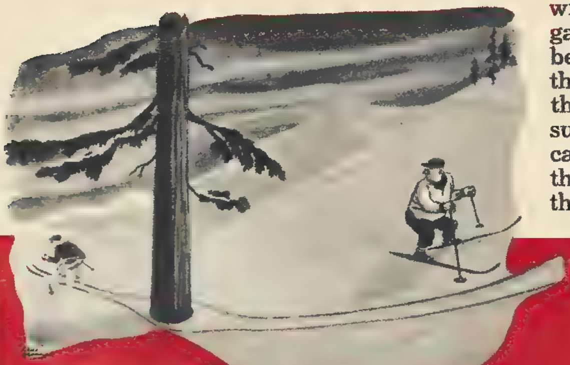
Canvasback is not a duck but a folding seat for sportsmen who like comfort at ball games, picnics and in rowboats. A. G. Busch & Co., Chicago, Ill.



Tee-Toter is an all-purpose sports cap with a zipper pocket in the crown and loops on the plastic visor for carrying tees or flies. Westbrook Hats, New York, N. Y.

Charles Addams: Car-toonist

THE day that Charles Addams drew the strange skiing cartoon at the left he became famous. That ski sketch even became a test for insanity—if you could see nothing wrong, the keeper had a nice padded place for you. But *the day* for Charlie was the one a year ago when Playwright Philip Barry gave him a beat-up Mercedes-Benz. Addams repaired the wreck into the slick 117-mph, 3-mile-a gallon dreamboat above (he's taking his beautiful wife for a speedy spin). He used the souped-up 220-hp Merk to qualify in the Watkins Glen, N. Y. road race last summer. Now he whips off two nightmare cartoons a week so he can afford to spend the rest of his time really getting out of this world—by tuning up fast cars. •



Cartoon © 1940 The New Yorker Magazine, Inc.

The zombie butler shambles into his master's "Bug" to roar down a ghoul-haunted road. Addams' rebuilt Italian Bugatti does 25 miles to a gallon on 130 hp, can hit 115 mph—but makes an infernal, bone-rattling racket.

Workbench Award

MECHANIX ILLUSTRATED

The Editor's Workbench

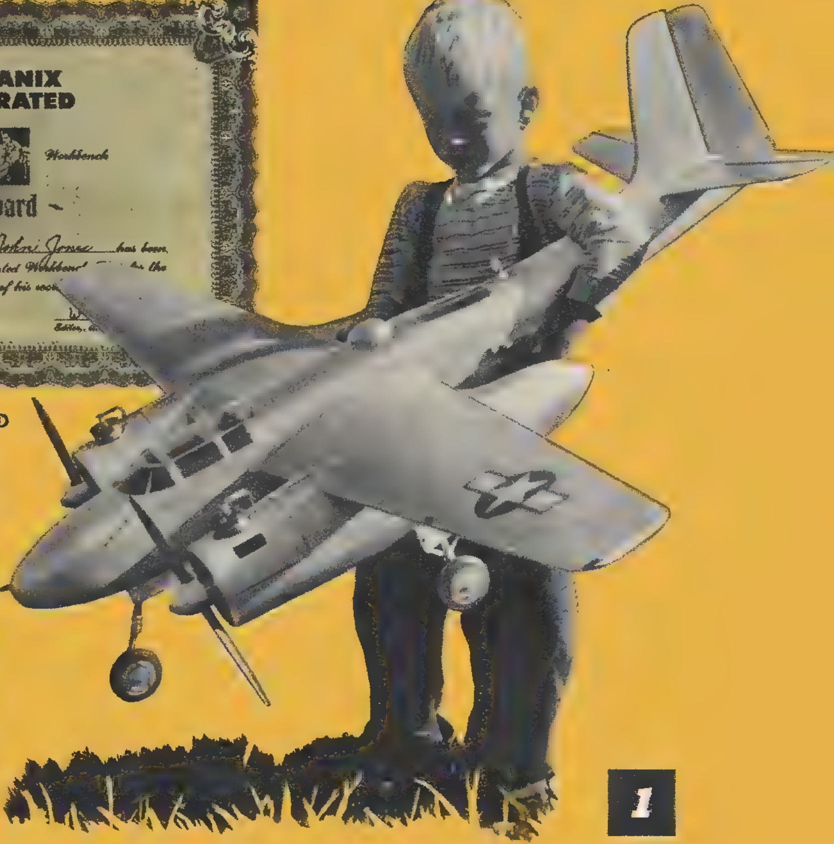
Award

This is to Certify that John Jones has been awarded a Mechanix Illustrated Workbench ... for the excellent craftsmanship of his ...

Boat

Project

Editor



1

WIN A WORKBENCH AWARD

To the builder of each project pictured on these pages we have sent the beautiful Workbench Award certificate shown above (which measures 10x13 in.) plus a five-dollar check. If you'd like to see your project in MECHANIX ILLUSTRATED and have the certificate, to say nothing about the extra five bucks worth of tools you can buy, then send a photo of your creation today to Editor's Workbench, Mechanix Illustrated, 67 West 44th Street, New York 18, N. Y.

PRIZE project—and prize picture—of the month belongs to James G. Sylvester of Oswego, New York, whose 4½ year old son Bruce is holding *their* exact-scale Douglas A-26 control line job. Powered with two McCoy 29 engines, the model features every detail down to the gun blisters, nose cannon, navigation lights and loop antennae! PHOTO 2. John S. Tichenor of Elkton, Maryland, appears quite happy—and well he should be. That slick motor scooter he's about to zoom off in came right from his workshop. The motor is an Elto Lightwin outboard, clutch and transmission are from an old Indian motorcycle. Top speed is well over 50 mph. PHOTO 3. John R. Pruchen of Owensboro, Kentucky, submitted this picture of a nautical table lamp. Says John, *"I built this lamp from plans appearing in the October 1947 issue of* MECHANIX ILLUSTRATED. *This was my first project on the wood lathe. Let's have more articles of this type."* PHOTO 4. Eugene Falls of Fresno, California, submits this fine photo of his boat appropriately named "The Fiend." Writes Eugene, *"This boat is just about the finest plaything a man ever had. I built her last spring in about a month of spare time at a cost of only twenty-five dollars. She will exceed 15 mph with any one of the small two cylinder outboards and can carry two. 'The Fiend' (the name was contributed by my wife) is equipped with a constant length and tension steering system which I find foolproof. Hope you like it as much as we."* PHOTO 5. Ralph Siettmann and David Nehring, of Milwaukee, Wisconsin, each built an MI Special race car, featured in the February 1948 issue of MECHANIX ILLUSTRATED. Both models are powered with .49 cubic inch displacement

Winners...

2

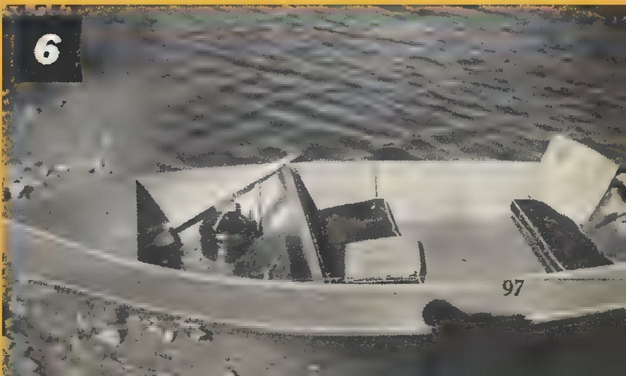
3

4

engines using a 1 to 1 gear ratio. Top speed to date, on a rail track is 70 mph—which is exceptional for a 30 dollar car using a stock motor. PHOTO 6. "SNUFFY" is an original MI boat design which thousands of readers have successfully built. During the past few years one of the latest to complete this project is Charles H. Pratt of Roscoe, California. Charlie added a few extra seats (comfortable ones he says) and has her fitted with a 2½ HP Johnson. Speed with four people is 7-8 mph. S'nuff said.

Let these few examples of what other readers are doing serve as inspiration and get started tonight on that pet project you've been thinking about. And don't forget to get some film for your Brownie so you can take some snaps to send along to us. Even if we don't print a picture of your work, we're always interested in seeing what you're doing . . . that's one way we gauge what new projects to print. •

5



6

Build ZIP

A 10-inch all-balsa race car powered with a miniature electric motor that will run for hours at a time. Build it in a day.

By Douglas Rolfe

THIS electrically-powered racing car operates on two or more standard flashlight cells, has a novel automatic bumper switch and is not difficult to build. Zip, as described in this article, has two intermediate batteries, but for greater speed a hook-up of six or even eight penlite batteries is recommended. There is ample room for the eight penlite cell installation and it is a simple trick to link these little batteries up in series. A further increase in speed, apart from increasing the voltage, is obtainable by fitting 1¾ in. diameter wheels. Two batteries with the two-inch diameter wheels shown give a fair turn of speed on a smooth floor but if you are looking for anything like *real* speed, by all means use the smaller diameter wheels and step up the batteries.

Zip is built from four pieces of medium soft balsa. As shown in the patterns drawing, Fig. 1, one piece of one-inch stock, two pieces of ¾ in. stock and one piece of ¼ in. stock are required to make the chassis and body. Front axle fairing pieces can be taken from scrap stock.

Lay out body and chassis blocks from the patterns given and rough out the body pieces as shown in Fig. 2. Cement the body pieces together and then carve to shape. Exact shape is not necessary, but it is best to adhere to the general lines given. Cut out the cockpit and drill body and chassis for the dowels which hold these parts together. The hardwood motor block is not absolutely essential and can be dispensed with if you elect to cement the motor in place rather than secure it with small woodscrews as shown in the drawings.

The worm and pinion gear affords a 7½ drive reduction and is simple to assemble. These gears are carried by most model or hobby shops. If your local dealer does not carry them, send a penny postcard to MECHANIX ILLUSTRATED, Zip, 67 West 44th St., New York 18, N. Y., and you will receive the name of the nearest source. Actually they are intended for 00 gauge trains and must be adapted to the shaft size given for the motor shaft and the front axle of the car. No particular difficulty will be found in adapting these gears but it is most important that both gears are centered before soldering or securing to the shaft and axle with set screws as was done on the original model. This worm and pinion gear if handled properly affords an easy positive drive and is not a power thief.

The battery clip can be purchased or made to suit but a commercial slide switch is recommended. As shown in the assembly drawing, Fig. 3, the switch toggle is harnessed to the hardwood bumper and the bumper shaft rides in a metal slide. Pulling the bumper out turns the current on and pushing the bumper in stops the car. Thus, when the car runs into a wall or any similar obstacle it automatically stops, conserving batteries.

[*Continued on page* 162]

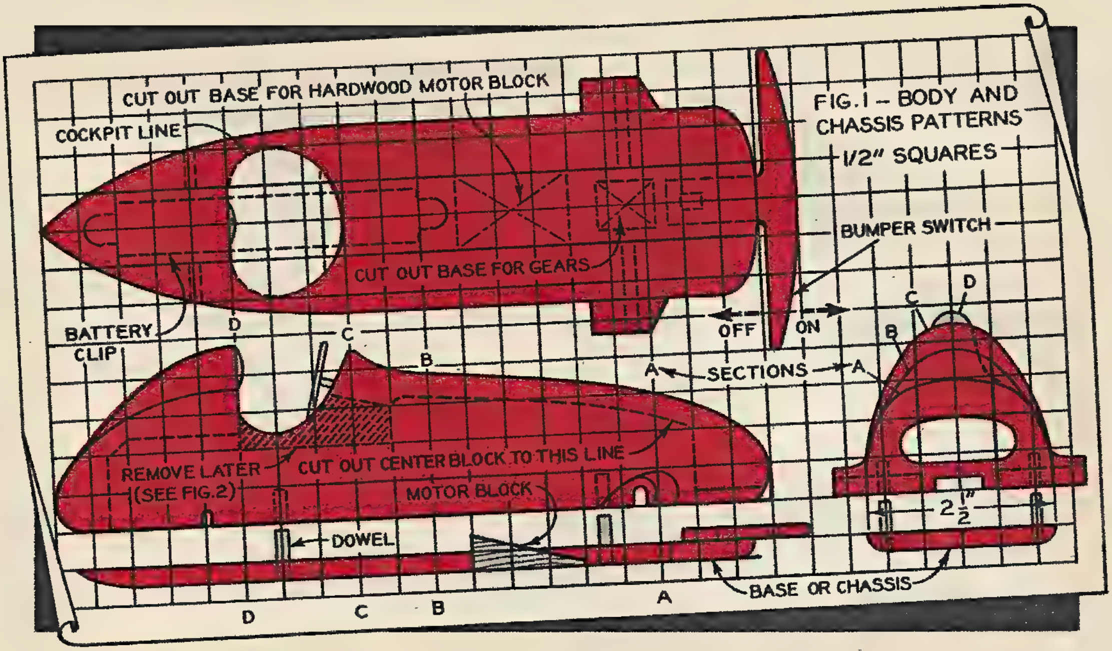
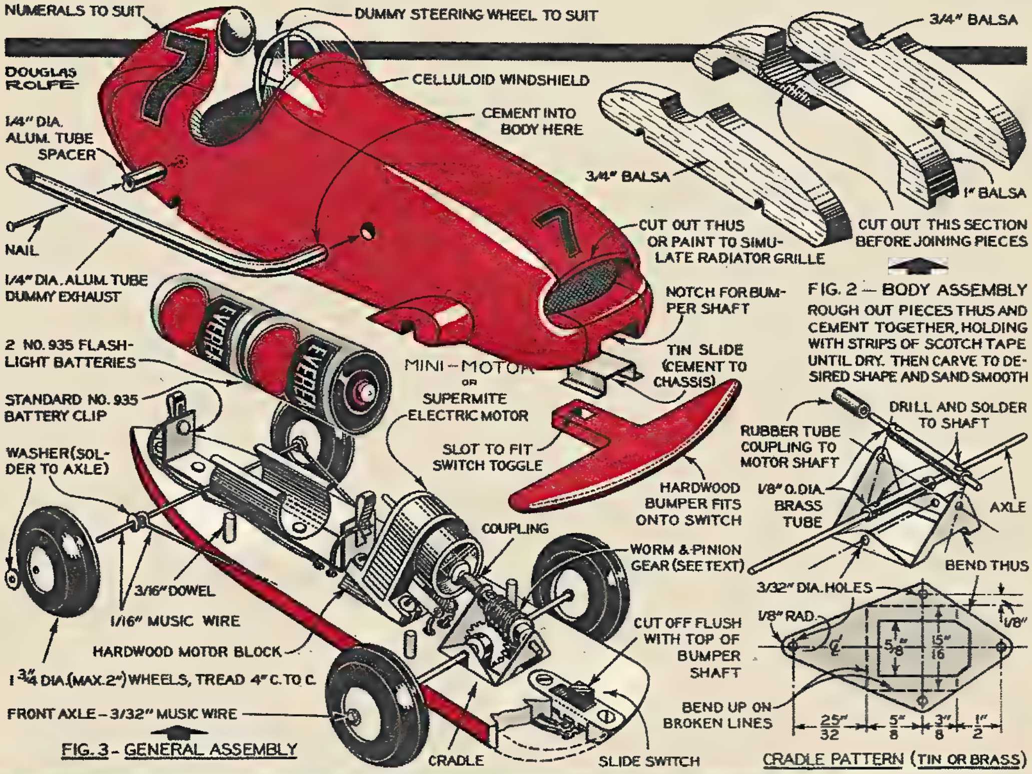


FIG. 1 – BODY AND CHASSIS PATTERNS 1/2" SQUARES

CUT OUT BASE FOR HARDWOOD MOTOR BLOCK
COCKPIT LINE
CUT OUT BASE FOR GEARS
BUMPER SWITCH
BATTERY CLIP
D
C
B
OFF
ON
A
SECTIONS
A
B
C
D
REMOVE LATER (SEE FIG. 2)
CUT OUT CENTER BLOCK TO THIS LINE
MOTOR BLOCK
DOWEL
$2\frac{1}{2}''$
BASE OR CHASSIS
D
C
B
A



NUMERALS TO SUIT
DUMMY STEERING WHEEL TO SUIT
DOUGLAS ROLFE
CELLULOID WINDSHIELD
1/4" DIA. ALUM. TUBE SPACER
CEMENT INTO BODY HERE
NAIL
1/4" DIA. ALUM. TUBE DUMMY EXHAUST
2 NO. 935 FLASH-LIGHT BATTERIES
STANDARD NO. 935 BATTERY CLIP
WASHER (SOLDER TO AXLE)
3/16" DOWEL
1/16" MUSIC WIRE
HARDWOOD MOTOR BLOCK
$1\frac{3}{4}$ DIA. (MAX. 2") WHEELS, TREAD 4" C. TO C.
FRONT AXLE – 3/32" MUSIC WIRE
CRADLE
SLIDE SWITCH
MINI-MOTOR OR SUPERMITE ELECTRIC MOTOR
SLOT TO FIT SWITCH TOGGLE
COUPLING
HARDWOOD BUMPER FITS ONTO SWITCH
WORM & PINION GEAR (SEE TEXT)
CUT OFF FLUSH WITH TOP OF BUMPER SHAFT
BEND UP ON BROKEN LINES
CUT OUT THUS OR PAINT TO SIMULATE RADIATOR GRILLE
NOTCH FOR BUMPER SHAFT
TIN SLIDE (CEMENT TO CHASSIS)
3/4" BALSA
3/4" BALSA
1" BALSA
CUT OUT THIS SECTION BEFORE JOINING PIECES
RUBBER TUBE COUPLING TO MOTOR SHAFT
DRILL AND SOLDER TO SHAFT
1/8" O. DIA. BRASS TUBE
AXLE
BEND THUS
3/32" DIA. HOLES
1/8" RAD.
1/8"
℄
5/8"
15/16"
25/32"
5/8"
3/8"
1/2"

FIG. 2 — BODY ASSEMBLY

ROUGH OUT PIECES THUS AND CEMENT TOGETHER, HOLDING WITH STRIPS OF SCOTCH TAPE UNTIL DRY. THEN CARVE TO DESIRED SHAPE AND SAND SMOOTH

FIG. 3 - GENERAL ASSEMBLY

CRADLE PATTERN (TIN OR BRASS)

FULL SIZE PLANS OF ZIP

may be obtained by sending 35c to the MECHANIX ILLUSTRATED Plans Service, Fawcett Building, Greenwich, Connecticut. Please specify Plan No. 399.

make this MIDGET RADIO SET

By Robert Hertzberg

SINCE the turn of the century, the science that has made the most rapid and certainly the most sensational advances has been that of radio-electronics. First, there was the miracle of "wireless" communication itself and its dramatic role in saving life at sea. Shortly after World War I, sound broadcasting gave a new dimension to mass entertainment and edification. Following World War II, radar emerged from behind a wall of secrecy to arouse public interest. Only in the last two years, television has become the young giant of the electronics art.

Despite this vast technological upsurge, one item of equipment is in use today in precisely the form in which it was introduced more than 40 years ago: the crystal detector. Mention the crystal to anyone old enough not to worry about the peacetime draft and his invariable remarks are, "Crystal sets? Heck, didn't those things go out of date with plus fours and running boards? Who wastes time these days playing with a catwhisker?"

Crystals did not go out of date at any time. They are still very effective devices, within their recognized limitations, for beautifully clear and noiseless reception of sound broadcasting, and they play an important part in the operation of radar sets. Crystal radio receivers possess three outstanding features: they are simple to build and therefore ideal for beginners; they are extremely cheap, even in these days of inflated prices; and they require no power of any kind, from either batteries or the house line.

A complete crystal receiver consists merely of a small coil, a couple of small condensers, the crystal detector itself, and a pair of earphones. For satisfactory results, an outside aerial is necessary. The longer and higher it is, the better. A good average length is 100 ft., including the wire that runs into the house. The function of the aerial is to pick up radio waves and to feed them to the crystal. The latter changes them into a form of electricity capable of actuating the earphones, but it does not amplify or strengthen them the way electron tubes do. The aerial *must* be big to scoop up enough energy to make an impression in the phones.

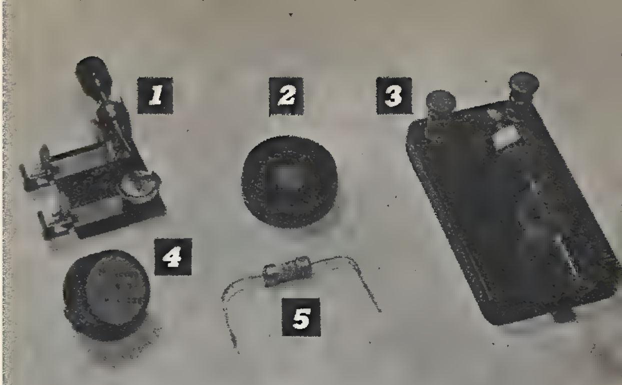
You pay for the cheapness and simplicity of crystal sets in the form of limited range and poor selectivity. A lot depends on location, but reliable reception on the regular broadcast band can be expected only up to distances of about 25 to 35 miles. This statement is certain to bring indignant letters from crystal-set owners who get excellent signals from stations 250 to 350 miles away. With a particularly sensitive crystal, a good location, and a dash of luck, reception up to a thousand miles is occasionally reported. The best time for DX (long distance) is late at night, during cold winter weather.

"Selectivity" is the ability of a radio receiver to separate stations. Crystal sets without exception tune very broadly. It is possible, through the use of certain circuit tricks, to increase the selectivity to a fair degree, but the trouble is that the signals themselves more or less expire in the process. The receiver to be described in this article has as much selectivity as can be attained without noticeable sacrifice of results.

You may ask, "Aren't earphones something of a nuisance?" Far from it. They put weak signals right into the ear, where they belong, and they shut out room noises. Any father who makes this set for a youngster will quickly learn that the earphones have a special appeal. The small fry will sit still, almost as if in a trance, while listening to programs. For any radio experimenter, a pair of earphones is a good investment because it will prove necessary and valuable later for use with a short-wave receiver.

Claims are made for some crystal sets that they will operate a loud speaker. *Any* crystal set will if it is close enough to a powerful broadcasting transmitter. How close is "close enough?" There's no way of telling except by trying. Just don't figure on it in advance.

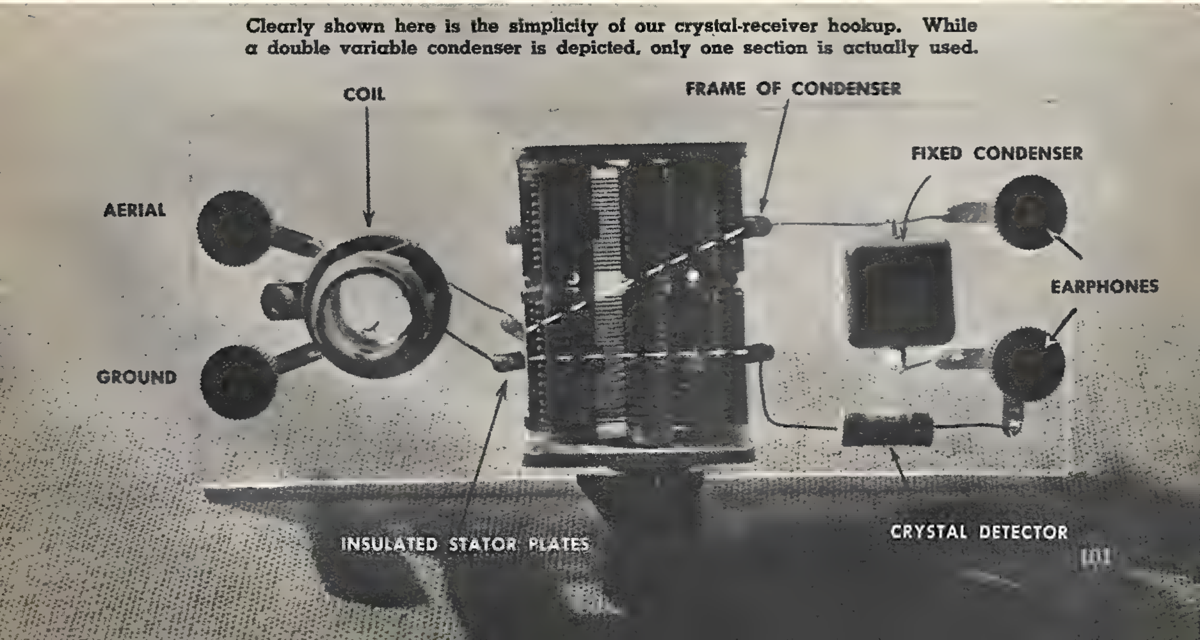
The "crystal" part of a crystal detector is a small chunk of silicon, perikon, iron pyrite, carborundum, or



Representative crystal detectors: 1 and 3—adjustable "catwhisker" types; 2—crystal unit without leads, in carrying case; 4—fixed type, fully enclosed; 5—germanium type, with connecting leads.

Splice the two postage-stamp condensers into a power wire to form an "aerial cord." The exposed bits of wire either side of the condensers should be thoroughly insulated with electrician's tape.

Clearly shown here is the simplicity of our crystal-receiver hookup. While a double variable condenser is depicted, only one section is actually used.



Here's the complete crystal-receiving outfit. The power-line "aerial cord" is connected at left, earphones at right.

galena. The last-named, chemically known as lead sulphide, has been the most popular of all crystals for several generations. The crystal is held in a cup or clip, and touching against it is a fine piece of spring wire called the catwhisker. A little probing with the wire quickly reveals the more sensitive portions of the crystal's surface. Germanium, a new crystal that came out of radar research, is superior in several respects and will probably replace all previous materials within a few years, or as rapidly as its price drops.

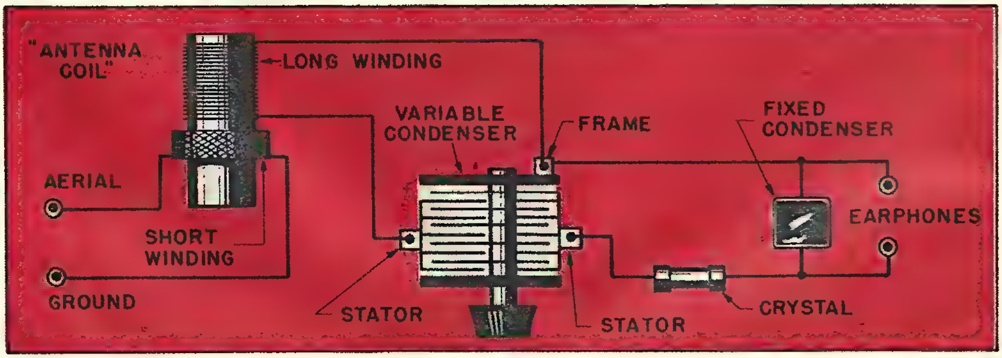
Only upon considering the monetary angle can one appreciate the real reason for the long-lived popularity of the crystal set. A perfectly good detector of the time-tried catwhisker type, complete with crystal, is listed in the standard radio catalogs for 22 cents. Imagine, less than a quarter, and it lasts forever. The fixed type, consisting of a specially selected crystal with pre-adjusted and mounted contact wire, costs all of 46 cents. Even the deluxe germanium unit, fixed up in a little container and looking like a tiny cartridge fuse, costs but $1.25. Some fine war-surplus silicons are sometimes found on bargain counters for ten cents, one dime.

You can wind a tuning coil yourself, but you can buy a suitable "replacement" antenna coil for about 39 cents, which is less than the retail cost of the wire itself. A small variable condenser, for tuning, will run from 49 to 89 cents; a postage-stamp fixed mica condenser, about 9 cents; four binding posts, a nickel or less apiece; and a swell pair of brand-new surplus Army phones, less than two dollars. One of the big mail-order firms offers a complete kit, including even the aerial, for around five dollars. As an inexpensive, painless way of getting started in radio, the crystal set is still tops!

The complete crystal receiver shown in the accompanying illustrations can be put together in an hour. It is a fine exercise in radio construction for a student . . . or for his father. The required parts are all standard and are available from radio houses everywhere. The coil and the crystal (of the germanium type) have already been mentioned. The tuning condenser can be any small variable condenser having a capacity of about 365 mmfd. ("Mmfd." stands for micro-micro-farad, the "farad" being the unit of size of electrical condensers.) A single condenser is all that is required, but it is probably easier and cheaper to buy a small dual unit designed originally for a.c.-d.c. sets of the midget type. The one shown in the model is a double condenser of which only the front section is used. The mica fixed condenser, of the molded bakelite type, is of the .002 mfd. size. ("Mfd." here means micro-farad. The prefix "micro" means one-millionth. The farad as a basic unit is much too large for practical purposes, the micro-farad being universally used instead.)

A piece of

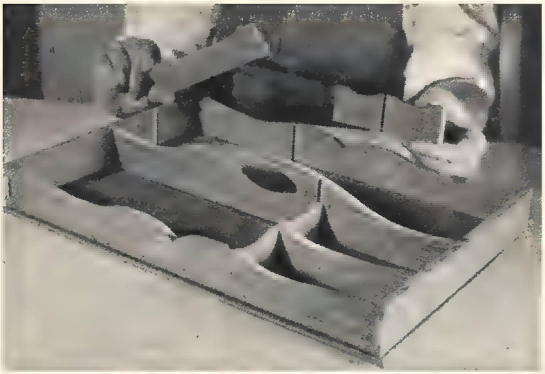
[*Continued on page* 140]



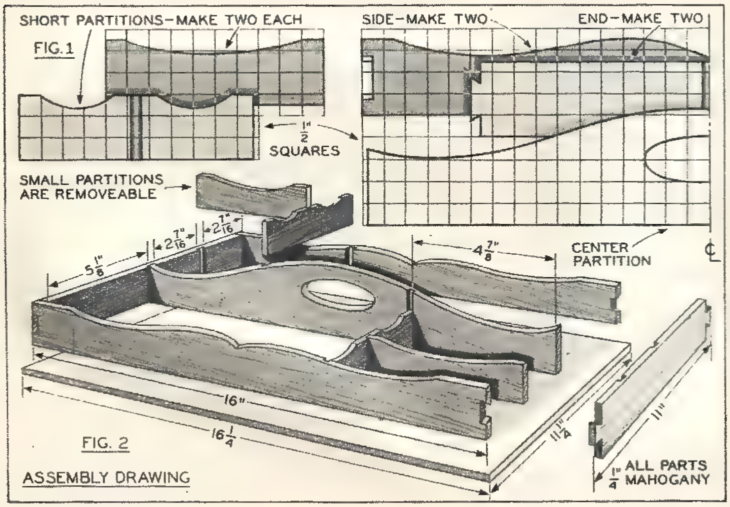
multi-purpose SERVING TRAY

THIS tray, with its graceful and simple lines, has unlimited uses. Fill it with cookies and candies and use it as the centerpiece on a party table. Or line the bottom with waxed paper and load it with cold cuts and the other ingredients of a buffet luncheon. Or put it on Milady's dressing table—she'll use it to hold her cosmetics, perfume bottle, comb-and-brush set, packages of bobby pins, and other odds and ends that she deems indispensable.

Make the nine pieces for sides and partitions from ¼-in. stock, as shown in Fig. 1. They are assembled as detailed in Fig. 2. The bottom projects ⅛ in. all around. Note that each partition slides into dadoes and that the corners are dovetailed and glued. The bottom is screwed to the ends, sides, and center partition, but not to the small partitions, which are removable. For the best effect, apply a natural finish. •



Dovetails and dadoes are used for exceptionally sturdy construction. The short partitions are made removable so items of varying size can be snugly accommodated.



SHORT PARTITIONS—MAKE TWO EACH
FIG. 1
SIDE—MAKE TWO
END—MAKE TWO
1/2" SQUARES
SMALL PARTITIONS ARE REMOVEABLE
2 7/16"
2 7/16"
5 1/8"
4 7/8"
CENTER PARTITION
℄
16"
16 1/4
11 1/4
11"
FIG. 2
ASSEMBLY DRAWING
1/4" ALL PARTS MAHOGANY

Use a tourniquet made of scrap wood and cord to clamp the tray securely while the previously applied glue is setting.

Photo Courtesy The Upson Company

Recover That Cracked Ceiling

When cracked plaster breaks off a ceiling, the best way to make repairs is to install new panels directly over the damaged area.

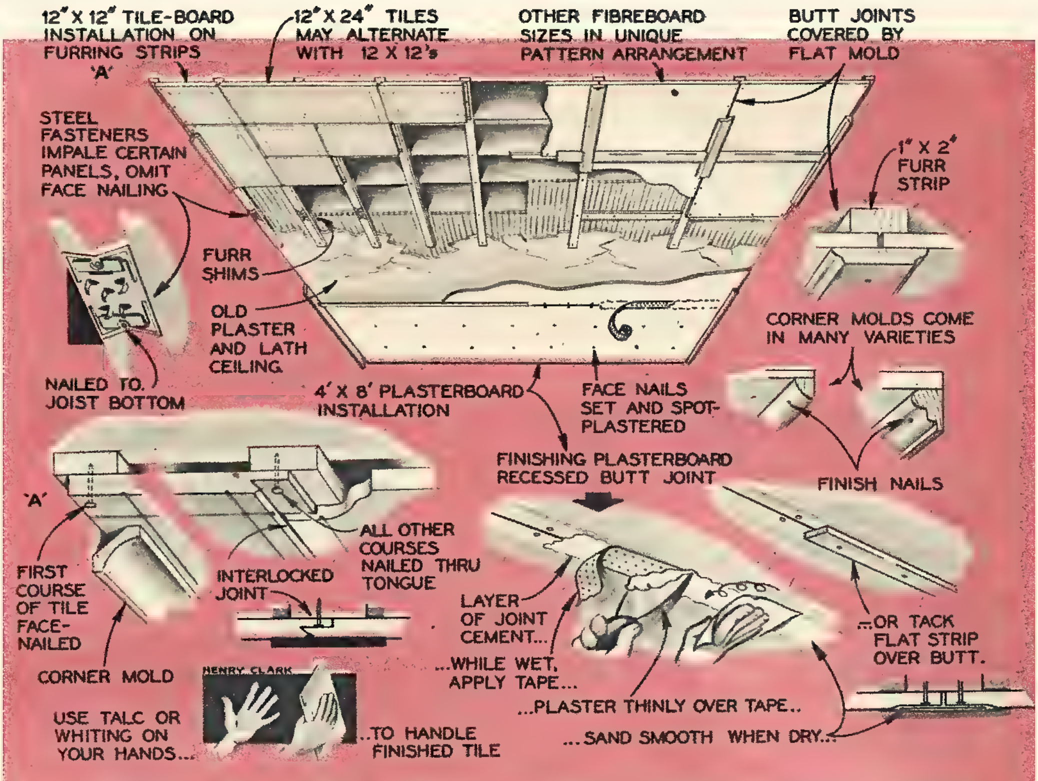
By Robert Scharff

IT'S a miserable sight when you stand looking at a patch of ceiling that has just crashed to the floor. You swallow a couple of times, clean up the awful mess, and sigh, "What now?" Provided you aren't busy doctoring up any personal injuries, we suggest you get right to work on a *new* ceiling.

And even though your ceiling hasn't let go yet, it's a good idea to take warning from any cracks or bellies. These should be ripped out and a new surface applied. Here's how to do it quickly yourself . . . and come up with an economical, lasting, and smart job.

A new ceiling can be made from any of the following materials: plaster, fiberboard, plywood insulation board, or gypsum wallboard. Plastering generally requires professional skill, but the others can be installed by any ambitious homeowner. They are made by such firms as The Upson Company and Johns-Manville and can be purchased from your local building-material yard.

After choosing the material, lay out a design to scale on paper before doing any actual work. Accurately mark all openings, columns, light fixtures, and other


12" X 12" TILE-BOARD INSTALLATION ON FURRING STRIPS 'A'
12" X 24" TILES MAY ALTERNATE WITH 12 X 12's
OTHER FIBREBOARD SIZES IN UNIQUE PATTERN ARRANGEMENT
BUTT JOINTS COVERED BY FLAT MOLD
STEEL FASTENERS IMPALE CERTAIN PANELS, OMIT FACE NAILING
1" X 2" FURR STRIP
FURR SHIMS
OLD PLASTER AND LATH CEILING
CORNER MOLDS COME IN MANY VARIETIES
NAILED TO JOIST BOTTOM
4' X 8' PLASTERBOARD INSTALLATION
FACE NAILS SET AND SPOT-PLASTERED
FINISHING PLASTERBOARD RECESSED BUTT JOINT
FINISH NAILS
'A'
ALL OTHER COURSES NAILED THRU TONGUE
FIRST COURSE OF TILE FACE-NAILED
INTERLOCKED JOINT
LAYER OF JOINT CEMENT...
...OR TACK FLAT STRIP OVER BUTT.
CORNER MOLD
HENRY CLARK
...WHILE WET, APPLY TAPE...
USE TALC OR WHITING ON YOUR HANDS...
...TO HANDLE FINISHED TILE
...PLASTER THINLY OVER TAPE..
...SAND SMOOTH WHEN DRY..

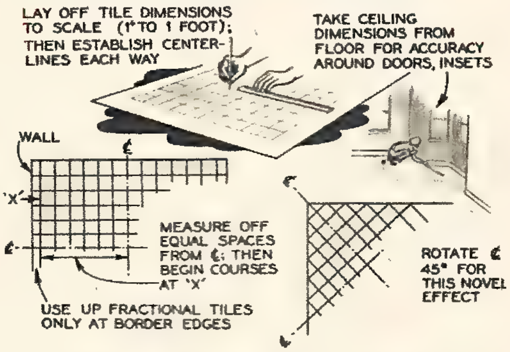
COMPOSITE VIEW SHOWING HOW ANY OF SEVERAL COVERINGS ARE QUICKLY APPLIED

irregularities on the drawing; then take the unit size of the material you have selected and try patterning it on the layout as shown in one of the accompanying drawings. If a border is required, it should be the same size all around; or if a fraction of a course of tile or panel is needed to complete the ceiling, the fraction should be divided equally and part used on each side of the room. Many pleasing arrangements can be developed to suit your individual tastes.

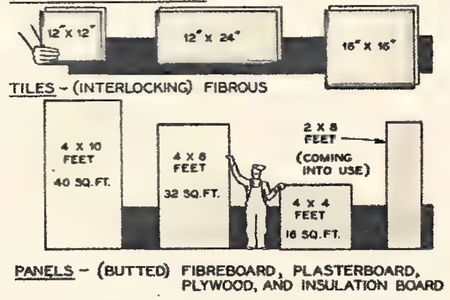
The first thing to do to the damaged ceiling is to install 1x2-in. wooden furring strips. These are nailed on 16-in. centers (or, when using 12x12-in. tiles, on 12-in. centers) right over the old plaster, at right angles to the joists. Apply any additional furring that may be required to conform to your panel design and lend added support. Shim the furring where necessary to provide a true and level surface.

Use 1$\frac{3}{8}$-in. plasterboard nails with $\frac{5}{16}$-in. heads or 3-d. smooth box nails for applying tongue-type tile or in joints that are to be covered with molding. For exposed joints in plasterboard, use 4-d. finishing nails, driven at an angle, with the heads carefully set slightly below the surface, or 17-ga.

PLAN YOUR CEILING-PANEL LAYOUT ON PAPER

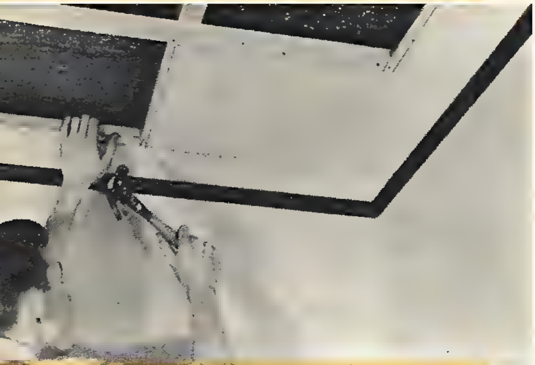

LAY OFF TILE DIMENSIONS TO SCALE (1" TO 1 FOOT); THEN ESTABLISH CENTER-LINES EACH WAY
TAKE CEILING DIMENSIONS FROM FLOOR FOR ACCURACY AROUND DOORS, INSETS
WALL
℄
'X'
℄
MEASURE OFF EQUAL SPACES FROM ℄; THEN BEGIN COURSES AT 'X'
ROTATE ℄ 45° FOR THIS NOVEL EFFECT
USE UP FRACTIONAL TILES ONLY AT BORDER EDGES

SELECT YOUR MATERIAL - THESE ARE MOST POPULAR


12" X 12"
12" X 24"
16" X 16"
TILES - (INTERLOCKING) FIBROUS
4 X 10 FEET 40 SQ. FT.
4 X 8 FEET 32 SQ. FT.
2 X 8 FEET (COMING INTO USE)
4 X 4 FEET 16 SQ. FT.
PANELS - (BUTTED) FIBREBOARD, PLASTERBOARD, PLYWOOD, AND INSULATION BOARD

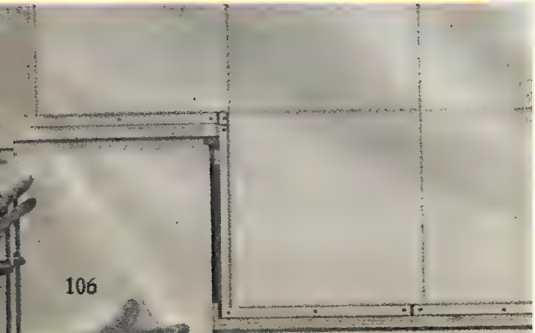
(ALL CAN BE CUT WITH KNIFE OR HANDSAW)

Once the furring strips are nailed into place, the ceiling is ready to take the tile panels.



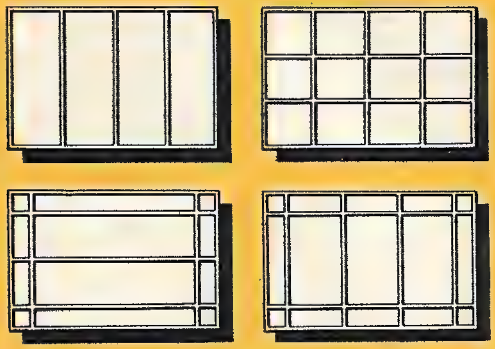
When securing the ceiling tile in place, nail up through the later-to-be-covered tongues.

Tongue edges should point to the middle of the room and fit snugly, without any forcing. Each tile, as it is installed, conceals all the nailheads in the tongue of its companion.



Photos Courtesy Johns-Manville

TYPICAL CEILING LAYOUT COMBINATIONS



FULL-SIZE PANELS ARE USED FOR FAST COVERAGE

PIECES SAWN FROM FULL PANELS, USED AS EDGINGS, MAKE DECORATIVE CEILINGS. WOODEN MOLD MUST COVER ALL JOINTS

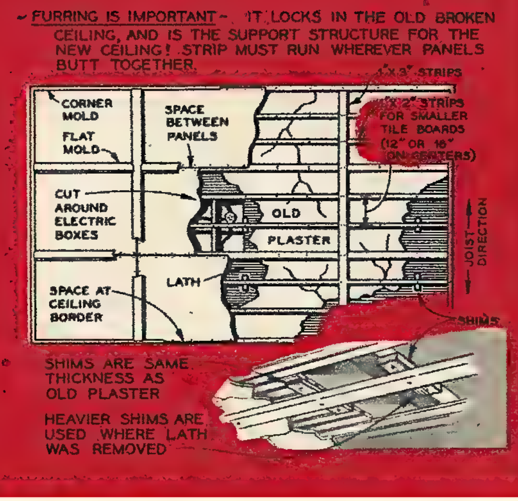
small-headed fiberboard nails driven straight and flush with the surface. Care must be taken to avoid hammer impressions in the finished surface.

When using insulation-board products, it is best to sort them by color, as there may be slight variations. Also, this material is a product that requires no paint or other finish; so care must be taken when unpacking and handling it to avoid scratching or marring the surfaces or breaking the corners and edges.

When installing tile blocks, start them at one edge of the ceiling. The tongue edges should face toward the middle of the room and fit snugly, without forcing, into the next course. Space the nails 6 to 8 in. apart. Face nailing, if necessary on the first and last courses, should be done carefully and neatly. During installation, check the joint lines occasionally for trueness.

On ceilings that are perfectly sound and reasonably level, tile may be cemented directly to the existing surface, using a compound that's specially made for the purpose. Remove all grease, dirt, loose paint, and wallpaper that might prevent a proper bond. The adhesive is applied to the backs of the tiles, not to the ceiling. With a putty knife, put four or five spots of the adhesive, about 2 in. in diameter and ½ in. thick, on each tile. These daubs should be kept 2 in. in from the edges and 8 to 10 in. apart. Place the tile lightly against the ceiling about 2 in. from the spot it is to occupy and slide it into place. Pressure must be exerted as it slides to provide a sufficient suction to hold it until the adhesive sets.

Erecting larger ceiling panels is more involved manually. Make two T-head props, from one-by-fours, about 1 in.


FURRING IS IMPORTANT — IT LOCKS IN THE OLD BROKEN CEILING, AND IS THE SUPPORT STRUCTURE FOR THE NEW CEILING! STRIP MUST RUN WHEREVER PANELS BUTT TOGETHER.
1" X 3" STRIPS
1" X 2" STRIPS FOR SMALLER TILE BOARDS (12" OR 16" ON CENTERS)
CORNER MOLD
FLAT MOLD
SPACE BETWEEN PANELS
CUT AROUND ELECTRIC BOXES
OLD
PLASTER
JOIST DIRECTION
LATH
SPACE AT CEILING BORDER
SHIMS
SHIMS ARE SAME THICKNESS AS OLD PLASTER
HEAVIER SHIMS ARE USED WHERE LATH WAS REMOVED

longer than the distance from the floor or scaffold to the ceiling. With the face of a panel down, lift it and wedge it into position, using the props. The panels should be forced tightly together except when an open-joint design is desired. For those who prefer, many different panel-joint treatments are possible by utilizing standard wood moldings.

Gypsum boards are installed as described immediately above, securing them with 4-d. finishing nails placed at least ⅜ in. in from the edges and ends and spaced from 4 to 6 in. apart. To make a joint-free ceiling, a mixture of gypsum finishing cement and water is forced into the butts and nail holes. Reinforcing tape is then applied over the joints, as shown. After this has dried, another coat of cement is applied, allowed to harden, and then sanded down.

Nail all moldings securely in place, spacing the nails not more than 8 in. apart and using ones long enough so they enter the furring far enough for good holding power.

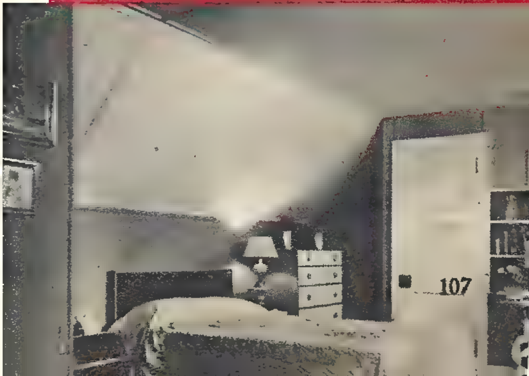
Although fiberboards, insulating panels, and tile provide decorative surfaces in themselves, it is sometimes desirable to paint them. Any standard lead-and-oil finish—flat, semigloss, high gloss, or enamel—can be applied. No sizing or priming of the surface is required except in the case of plywood, which should receive a coat of special plywood sealer before being painted. If you're going to use wallpaper or plastic paint over insulating or fiber panels, don't expect them to conceal otherwise untreated joints.

Except in its wood-grain finishes, gypsum board must be painted, calcimined, or papered. To get even coverage, first apply a primer or sizing coat. •

During installation, check all the joints occasionally to be sure they are running straight.

For an unusual and attractive effect, run the tiles diagonally across the damaged ceiling.

Above: Some panels are secured with metal fasteners that grip them from behind. A few sharp blows lock them in place. Below: A bedroom made from attic storage space.



How To Build SNIPE

PART II

Photo by Rosenfeld

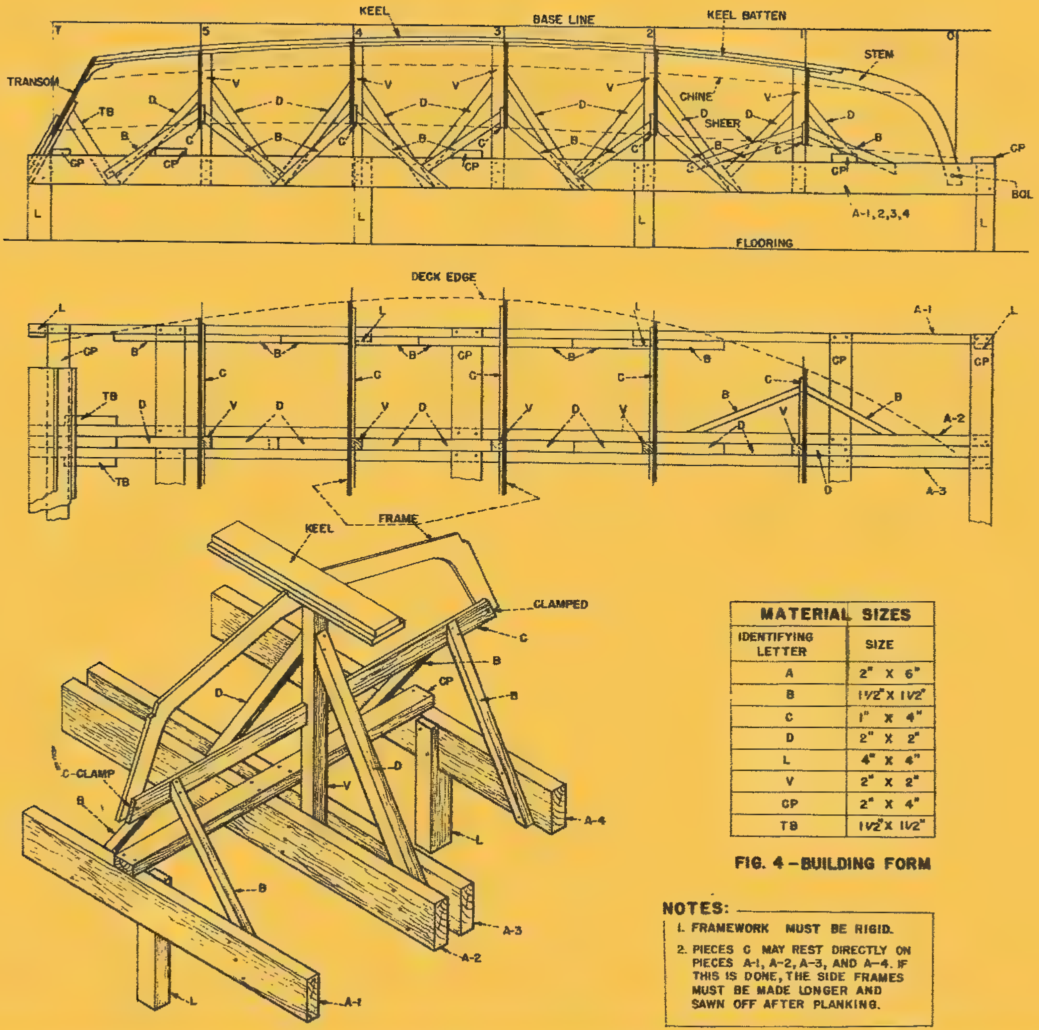
By William F. Crosby

THE building form is shown in Fig. 4. This drawing is pretty well self-explanatory. The lengths of the vertical members, marked *V*, should be taken from your full-size lines drawing. These members run from inside the keel batten to the bottom of fore-and-aft stringers *A-2* and *A-3*, which are placed any convenient distance below the inverted sheer line. Each vertical member has a slight bevel at the end where it touches the keel batten. You can get this exactly from the full-size drawing.

When the building form is completed, make the stem and attach it to the keel with four ¼-in. galvanized bolts. The detail drawing of the stem (Fig. 3) shows it in two pieces, but you can use either one-piece or two-piece construction. Most *Snipes* have one-piece stems, usually of Philippine mahogany or other wood lighter than oak. A nice hackmatack (tamarack) knee would be perfect. It should be 3 in. thick. Leave the top of the stem a little long so it can be bolted between fore-and-aft stringers *A-2* and *A-3*. Lay the stem-and-keel assembly over, and clamp it to, vertical pieces *V*, taking care to be sure of the exact longitudinal spacing.

Next, make, assemble, and install the transom and transom knee. The angle at which the transom is set up is taken from the full-size drawing. Bolt or screw the knee to the keel batten.

The frames go on next, Nos. 1, 2, and 3 being placed on the forward sides of their respective station lines and Nos. 4 and 5, on the after sides. Each frame should be



MATERIAL SIZES	
IDENTIFYING LETTER	SIZE
A	2" X 6"
B	1 1/2" X 1 1/2"
C	1" X 4"
D	2" X 2"
L	4" X 4"
V	2" X 2"
GP	2" X 4"
TB	1 1/2" X 1 1/2"

FIG. 4 – BUILDING FORM

NOTES:

1. FRAMEWORK MUST BE RIGID.
2. PIECES C MAY REST DIRECTLY ON PIECES A-1, A-2, A-3, AND A-4. IF THIS IS DONE, THE SIDE FRAMES MUST BE MADE LONGER AND SAWN OFF AFTER PLANKING.

carefully squared and plumbed; then bolted through the keel and keel batten. Countersink the bolt heads into the outside of the keel. After tightening the nuts, saw off the excess threaded lengths and flatten the stub ends with a hammer. Clamp the frame ends securely to cross members *C*. The entire framework must be rigidly braced; otherwise the two sides of the finished boat may have different shapes.

The chines are run in next, beveling the notches in the frames so they lead true and fair from bow to stern. The after ends notch into the cheek pieces around the edge of the transom, as do the keel and keel batten. The optional spruce stringer shown at the sheer may be used if you wish. It is there to ease making the joint between deck and side planking watertight. The deck is glued and bradded to it and to the edge of the planking. It simply provides more surface for the glued joint.

The clamps, like the chines and sheer stringers, bevel into the stem and are secured to each frame head with one 2-in. No. 14 screw. To prevent any possibility of splitting, put the screw into the first frame near the top edge of the clamp and put the one into the next frame near the bottom edge of the clamp. Continue alternating in this manner.

Now comes the planking—the hardest job for most amateurs. Start with the planks next to the keel (called the garboards) and work out. After one plank is on, fit and secure its mate on the other side. Do this throughout the sequence to equalize the strains on the frames and building form. The garboards must be shaped a little. Clamp the material in place and mark it

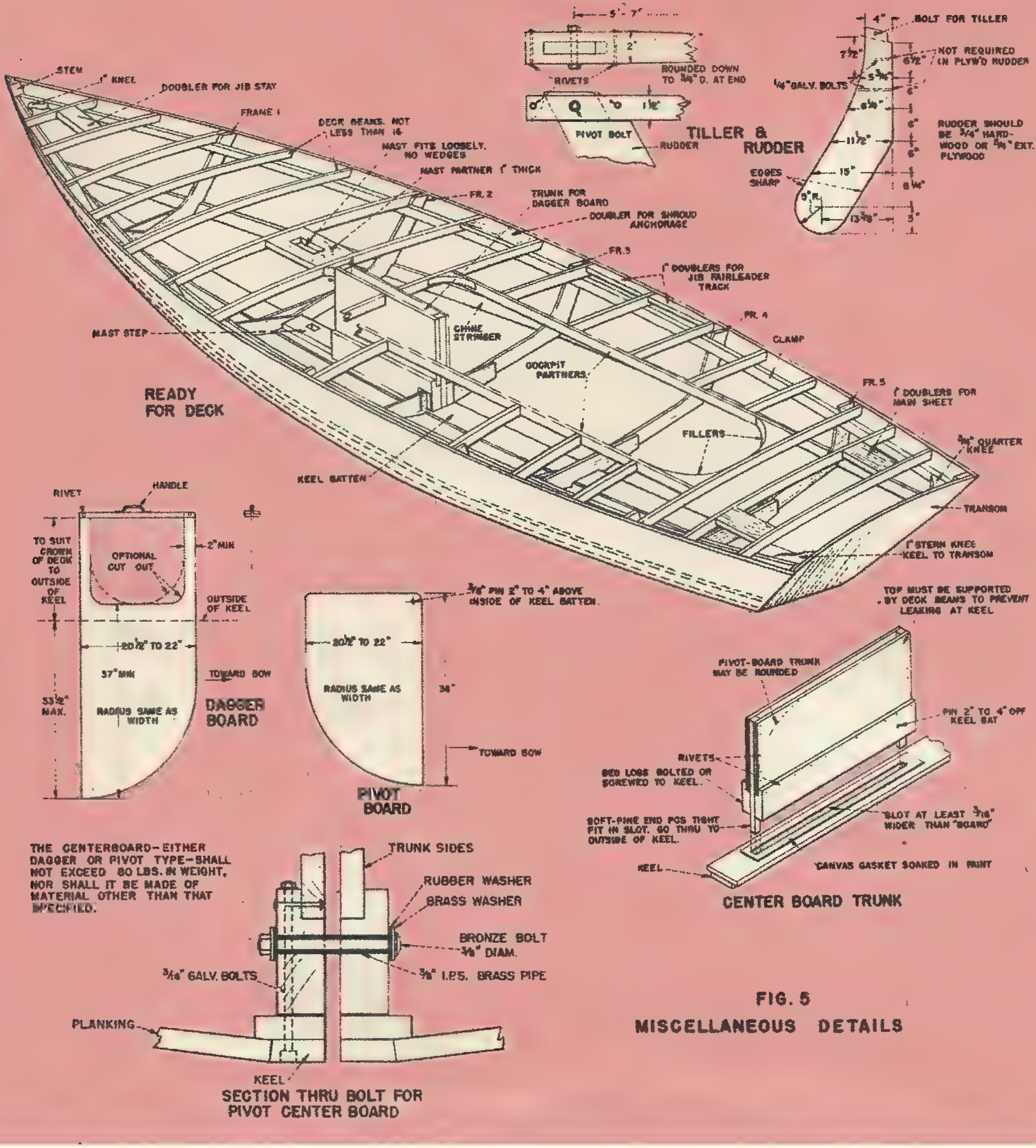

STEM
1" KNEE
DOUBLER FOR JIB STAY
FRAME 1
DECK BEAMS. NOT LESS THAN 16
MAST FITS LOOSELY. NO WEDGES
MAST PARTNER 1" THICK
FR. 2
TRUNK FOR DAGGER BOARD
DOUBLER FOR SHROUD ANCHORAGE
FR. 3
1" DOUBLERS FOR JIB FAIRLEADER TRACK
FR. 4
CLAMP
MAST STEP
CHINE STRINGER
COCKPIT PARTNERS
FR. 5
1" DOUBLERS FOR MAIN SHEET
FILLERS
3/4" QUARTER KNEE
TRANSOM
1" STERN KNEE KEEL TO TRANSOM
KEEL BATTEN
READY FOR DECK
5'-7"
2"
ROUNDED DOWN TO 3/4" D. AT END
RIVETS
1 1/2"
PIVOT BOLT
RUDDER
TILLER & RUDDER
4"
BOLT FOR TILLER
7 1/2"
6 1/2"
NOT REQUIRED IN PLYW'D RUDDER
1/4" GALV. BOLTS
5 3/4"
6"
8 1/8"
6"
11 1/2"
6"
RUDDER SHOULD BE 3/4" HARD-WOOD OR 5/8" EXT. PLYWOOD
EDGES SHARP
15"
6 1/4"
5" R.
13 3/8"
3"
RIVET
HANDLE
TO SUIT CROWN OF DECK TO OUTSIDE OF KEEL
OPTIONAL CUT OUT
2" MIN
OUTSIDE OF KEEL
20 1/2" TO 22"
37" MIN
TOWARD BOW
53 1/2" MAX.
RADIUS SAME AS WIDTH
DAGGER BOARD
3/8" PIN 2" TO 4" ABOVE INSIDE OF KEEL BATTEN.
20 1/2" TO 22"
RADIUS SAME AS WIDTH
36"
TOWARD BOW
PIVOT BOARD
TOP MUST BE SUPPORTED BY DECK BEAMS TO PREVENT LEAKING AT KEEL
PIVOT-BOARD TRUNK MAY BE ROUNDED
PIN 2" TO 4" OFF KEEL BAT
RIVETS
BED LOGS BOLTED OR SCREWED TO KEEL.
SOFT-PINE END PCS TIGHT FIT IN SLOT. GO THRU TO OUTSIDE OF KEEL.
SLOT AT LEAST 3/16" WIDER THAN "BOARD"
KEEL
CANVAS GASKET SOAKED IN PAINT
CENTER BOARD TRUNK
THE CENTERBOARD—EITHER DAGGER OR PIVOT TYPE—SHALL NOT EXCEED 80 LBS. IN WEIGHT, NOR SHALL IT BE MADE OF MATERIAL OTHER THAN THAT SPECIFIED.
TRUNK SIDES
RUBBER WASHER
BRASS WASHER
BRONZE BOLT 3/8" DIAM.
3/16" GALV. BOLTS
3/8" I.P.S. BRASS PIPE
PLANKING
KEEL
SECTION THRU BOLT FOR PIVOT CENTER BOARD

FIG. 5
MISCELLANEOUS DETAILS

from underneath; then unclamp and saw and plane to the exact shape. Try it for fit. If it s not quite right, mark the high spots and plane off until it fits exactly into the rabbet formed by the keel and keel batten. At the stem, the rabbet has to be chiseled out. This is done by clamping a narrow strip of the planking material in place and cutting a little notch in the stem to allow it to fit flush. Repeat this in several places; then join the notches with a continuous cut. The end of each plank will have to be shaped slightly to fit into this curved rabbet.

When the first pair of planks is on, clamp the second pair in position and mark, saw, and plane to shape as described before. Use 1½-in. No. 10 screws for fastening the planking to the framework, spacing them 3 to 4 in. apart and counterboring and plugging with ½-in. boat bungs. The body bit should be 13/64 in. and the lead bit, No. 30. Put good waterproof glue between the planking and the keel, chines, stem, and transom. Fasten the planking to both the transom and its cheek piece.

The best way for an amateur to finish the seams between planks is to have the planks butt flat against each other for the first ⅛ in. out from the frames; then to vee them just enough so you can put in a thread of calking cotton and cover off with seam compound. The amount of space between seams is a matter of guessing. The drier the

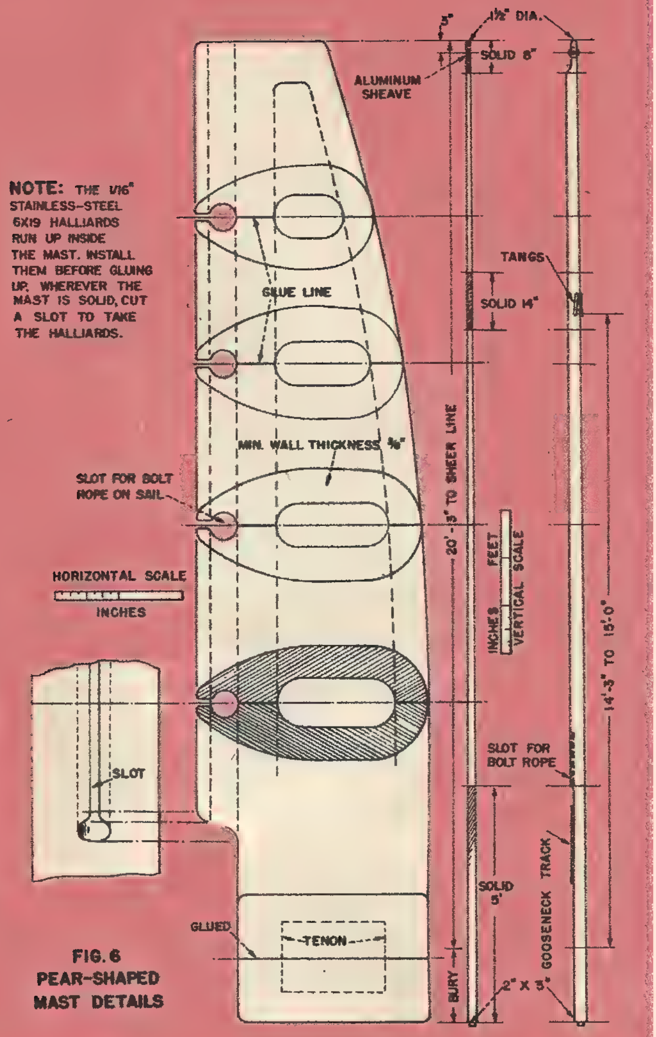

NOTE: THE 1/16" STAINLESS-STEEL 6X19 HALLIARDS RUN UP INSIDE THE MAST. INSTALL THEM BEFORE GLUING UP. WHEREVER THE MAST IS SOLID, CUT A SLOT TO TAKE THE HALLIARDS.
ALUMINUM SHEAVE
3"
½" DIA.
SOLID 8"
GLUE LINE
TANGS
SOLID 14"
MIN. WALL THICKNESS ⅜"
SLOT FOR BOLT ROPE ON SAIL
HORIZONTAL SCALE
INCHES
20'-3" TO SHEER LINE
FEET
INCHES
VERTICAL SCALE
14'-3" TO 15'-0"
SLOT
SLOT FOR BOLT ROPE
SOLID 5'
GOOSENECK TRACK
GLUED
TENON
BURY
2" X 3"

FIG. 6
PEAR-SHAPED
MAST DETAILS

wood, the greater the space. If the seams are made too tight, they may swell enough to pull out the fastenings when the boat gets soaked up with water. As you add the bottom planking, you'll come to the edge of the chine. The planks should be mitered here to fade off into a feather edge. The pointed ends must be securely fastened into the chine and into the edges of the adjoining planks or they will work out.

The topside planking is somewhat easier to put on. Most amateur-built boats have two planks on each side and many have three. Start each plank at the stem, fastening it in place; then bend it around the boat, securing to each frame as you go. If your wood is very dry, you may have trouble bending the topmost plank into place. Overcome any danger of cracking by soaking the wood with wet cloths wrapped around it. To keep the wood wet, occasionally douse it with hot water. Before bending, give the water plenty of time to soak through the wood.

When the planking is all in place, take the hull off the building form and turn it rightside up. Next, cut the slot for the centerboard. It must be accurately made and squared at the ends. Most small boats have trouble at this point, so be warned in advance—make a cabinetmaker's job of the centerboard trunk. Note that the center portion of Frame No. 3 must be cut away to allow the bed logs to rest on the keel. Fasten the bed logs to this frame on both sides with brass angle bars, screwing into the bed logs and bolting through the frame ends. It's important to allow ample width inside the centerboard trunk so when the wood swells you'll still be able to raise and lower the board. On the other hand, you don't want to make the slot too wide or it will affect the speed of the boat. The more you let water get up in the slot and slosh around, the slower your boat will be. A good compromise is clearance of about ⅛ to $\frac{3}{16}$ in. on each side of the board. Make the soft-pine end pieces long enough to protrude down through the slot and cut them off flush with the outside of the keel. The trunk is set down on a canvas gasket soaked in white lead and secured in place with bolts spaced 4 to 5 in. apart. Counterbore for the heads in the underside of the keel and set up the nuts tightly on the inside.

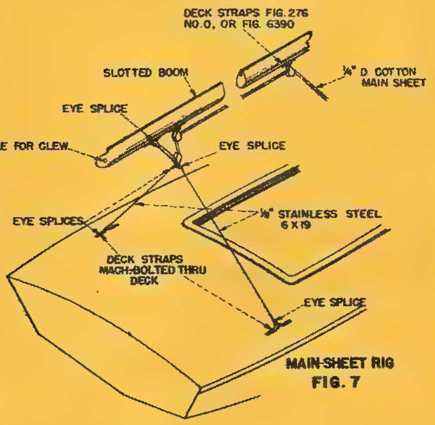
The deck-beam construction is clearly shown in Fig. 5. The crown of the deck may be anywhere from ½ to 1 in. for every foot of beam. This means that the crown must be between 2½ and 5 in. at the widest point of the deck. The beams are sawn to radius from Sitka spruce and are fastened down to the clamps.

Make the rudder and tiller as shown in Fig. 5. The mast detail is given in Fig. 6. It is simply two pieces of spruce that are routed out, glued together, and then shaped. There are no screws, bolts, brads, or other fastenings in it. The slot for the bolt rope should be slightly larger than the diameter of the rope. Run the stainless-steel halliards up inside the mast. On a lot of present-day *Snipes*, the mast is stepped on deck. On all the fastest boats, the mast is made the maximum allowable height above the sheer, the mainsail being carried right up to the top and the jib being set as near as possible to the deck. Fig. 7 shows a main-sheet rig that works well. The sails should be the product of a professional sailmaker.

For the Snipe-Class restriction sheet, write to the Executive Secretary, Wm. F. Crosby, 522 Stellar Ave., Pelham 65, N. Y. The sheet is free for the asking and tells you exactly what you may or may not do. Remember, nothing is optional on these plans unless so stated. If there are questions regarding points that might cause a boat to be refused a measurement certificate, write to Chairman John T. Hayward, International Rules Committee, P. O. Box 2039, Tulsa 2, Oklahoma. The accompanying plans and specifications are copyrighted by the Snipe Class International Racing Association. •

LARGE-SCALE PLANS

will greatly simplify construction. Send $5 to MECHANIX ILLUSTRATED Plans Service, Fawcett Building, Greenwich, Connecticut. Please specify Plan No. B-160.



MAIN-SHEET RIG
FIG. 7

Winners of Snipe-Class Internationals at Geneva, Switzerland, in 1947, were T. A. Wells, Wichita, and his crew, Dr. Martin du Pan, of Switzerland.

BILL OF MATERIALS

Lumber

(Sizes given are for finished lumber, as it is in the completed boat, thus are minimum requirements.)

Keel: ¾"x4"x13' oak or Philippine mahogany
Keel Batten: ¾"x5"x13' oak or Philippine mahogany
Stem: 3"x10"x3'-3" oak or Philippine mahogany (or in two pieces)
Frames: ¾"x2½"x30' oak or spruce (or sawn from waterproof plywood)
Deck Beams: ¾"x10"x48' spruce, sawn to crown
Chines: ¾"x1½"x16' oak (2 pcs. req.)
Clamps: ¾"x1½"x16' spruce or fir (2 pcs. req.)
Chine Gussets: 12 sq. ft. of ¾" oak or spruce or ½" waterproof plywood, or 24 sq. ft. of ¼" wateproof plywood
Floor Gussets: 10 sq. ft. of ¾" oak or spruce or 20 sq. ft. of ¼" waterproof plywood
Centerboard-Trunk Bed Logs: 2"x4"x7' Philippine mahogany
Centerboard-Trunk Sides: 14 sq. ft. of ¾" Philippine mahogany or spruce or ⅝" waterproof plywood
Centerboard-Trunk End Pieces: 5 lin. ft. of white pine, size to suit
Transom: ¾" Philippine mahogany or ⅝" waterproof plywood, 18"x42".
Deck Doublers and Fillers: 16 sq. ft. of 1" spruce or Philippine mahogany
Transom Cheek Pieces: ¾"x2"x5' Philippine mahogany or spruce
Planking: ¾" white cedar, red cedar, spruce, or juniper—2 pcs., 10"x16'; 2 pcs., 12"x16'; 4 pcs., 8"x16'; and 2 pcs., 10"x14'
Sheer Molding: 32 lin. ft. of ¾" Philippine-mahogany half-round
Flooring: sufficient ⅝" fir to equal area of cockpit
Floor Beams: ¾"x1¼"x10' spruce
Cockpit Trim: ¼" Philippine mahogany
Cockpit Partners: ¾"x2" spruce or fir
Rudder: ¾"x18"x54" Philippine mahogany or waterproof plywood
Tiller: 1½"x2"x6' ash or spruce
Mast: 1"x4"x22' spruce (2 pcs. req.)
Boom: ¾"x4"x8'-9" spruce

Hardware

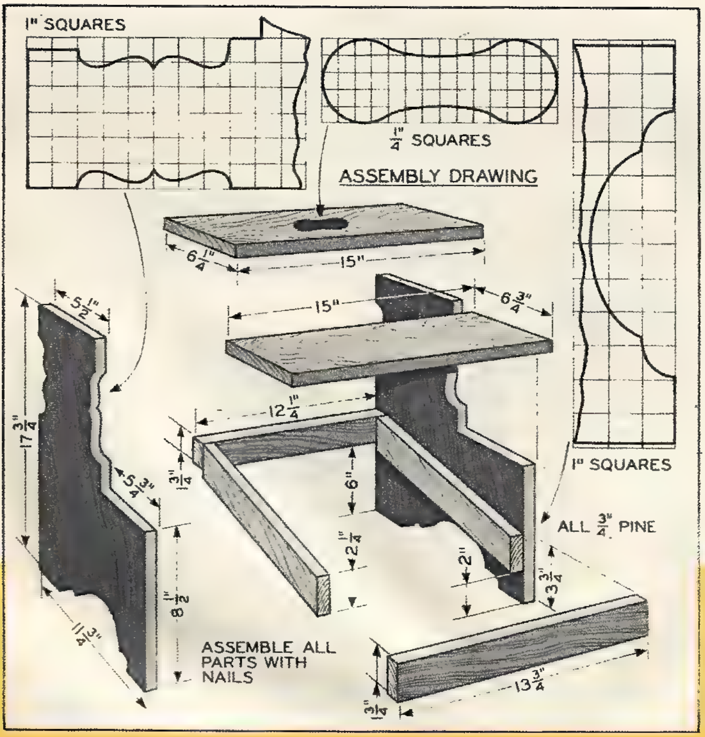
Complete, specially packaged kits of approved hardware can be purchased by mail from John Dory, P. O. Box 96, Fair Haven, New Jersey.

Kitchen Step-Up

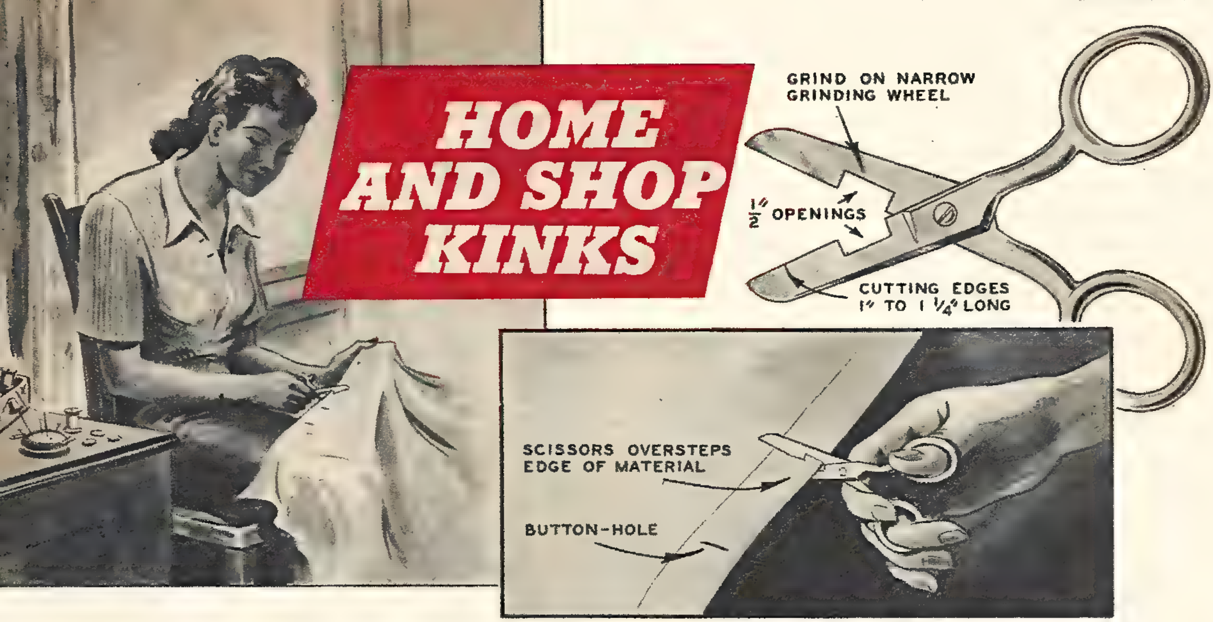
Paraphrasing Mr. Elevator-Shoe Adler, "Now she can be taller than you are."

HERE'S a simple knock-together item—like many simple things, it'll give you and the family more use than would a fancy Adam mantel or an exquisite Italian credenza—and you won't have to worry whether or not you have achieved a true cinquecento feeling. In other words, 'tain't Chippendale, but 'tis a nice-lined example of woodshed American.

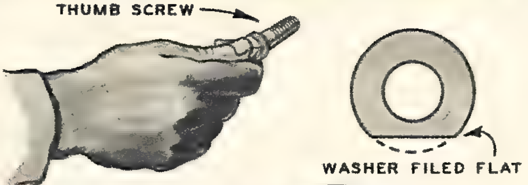
Assembling it is a hammer-and-nail affair. The end product serves the same purpose as elevator shoes in raising you above the common herd. It also can be used for sitting down when you're feeling low. Don't look here for instructions on how to make it—the artist fellow who did the drawing off yonder to port got it all in there. After mailing up the step-up, paint it to suit your taste. A Pennsylvania Dutch or Peter Hunt motif, such as is shown in the photo, is good, but a natural finish would be OK, too.—*J. P. Arnold.*


1" SQUARES
1/4" SQUARES
ASSEMBLY DRAWING
1" SQUARES
6 1/4"
15"
15"
6 3/4"
5 1/2"
17 3/4"
12 1/4"
3/4"
6"
5 3/4"
2 1/4"
2"
3 1/4"
8 1/2"
ALL 3/4" PINE
11 3/4"
ASSEMBLE ALL PARTS WITH NAILS
13 3/4"
3/4"

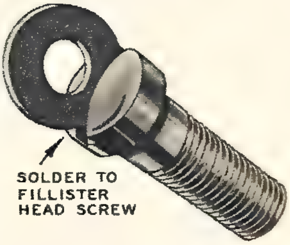
HOME AND SHOP KINKS

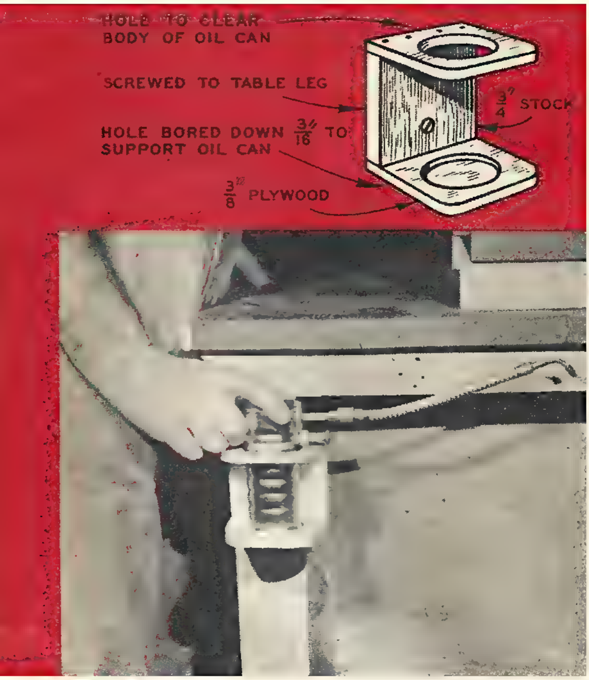

GRIND ON NARROW GRINDING WHEEL
$\frac{1}{2}''$ OPENINGS
CUTTING EDGES 1" TO 1 $\frac{1}{4}$" LONG
SCISSORS OVERSTEPS EDGE OF MATERIAL
BUTTON-HOLE

BUTTON-HOLE SCISSORS. If the women folks in your home could use a good pair of button-hole scissors, you can save a few dollars by altering an ordinary 4½-in. pair of the dime-store variety to do the job. Merely grind a ½-in. notch about 3/16 in. deep in each blade, as shown. Quench the blades often to prevent loss of temper.

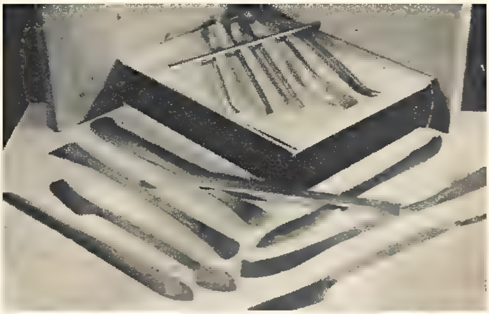

THUMB SCREW
WASHER FILED FLAT

SHOP-MADE THUMB SCREWS. You can quickly make a thumb screw by soldering a steel washer into the slot of a filister-head screw. The hole makes it possible to insert a rod to give you added leverage for tightening and loosening.

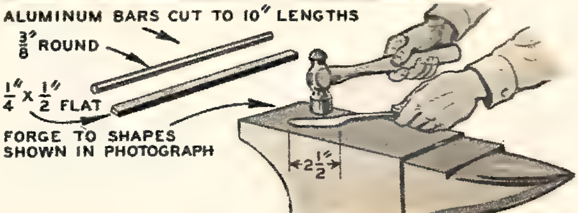

SOLDER TO FILLISTER HEAD SCREW


HOLE TO CLEAR BODY OF OIL CAN
SCREWED TO TABLE LEG
$\frac{3}{4}''$ STOCK
HOLE BORED DOWN $\frac{3}{16}''$ TO SUPPORT OIL CAN
$\frac{3}{8}''$ PLYWOOD

OIL-CAN STAND. Plunger-type oil cans have a habit of falling over and dripping because of the long neck overhang. This can be eliminated by making the simple double-hole bracket illustrated. When finished, mount it on a bench leg.

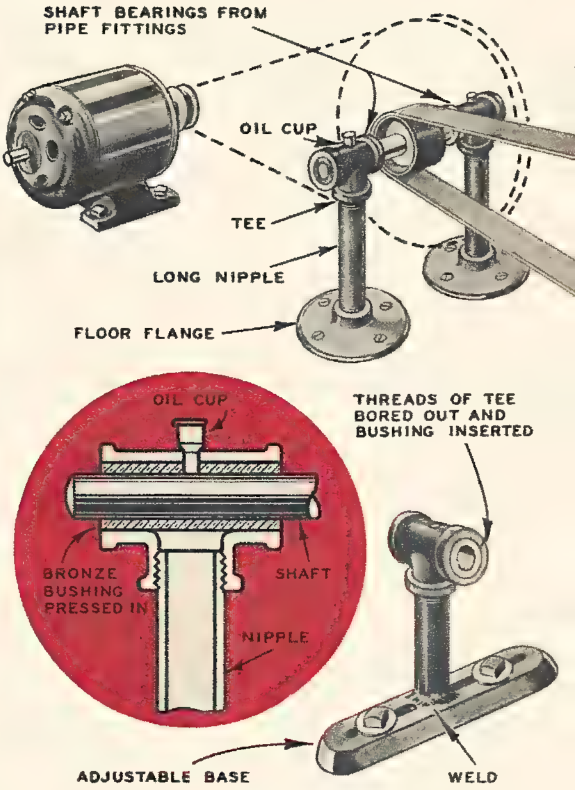


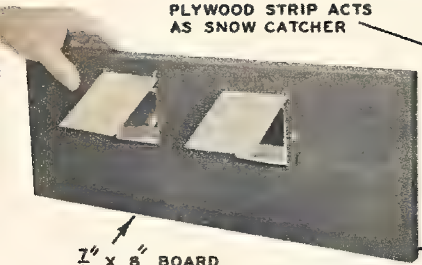
COLD-FORGED ALUMINUM MODELING TOOLS. If you model in wax, clay, or plaster, you can make a wonderful assortment of tools by cold-forging them from 10-in. lengths of round or flat aluminum, using a 20-oz. ball-peen hammer.

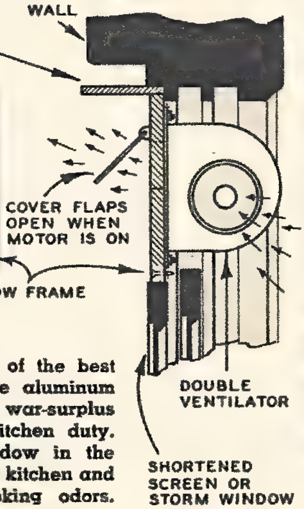

ALUMINUM BARS CUT TO 10" LENGTHS
$\frac{3}{8}''$ ROUND
$\frac{1}{4}'' \times \frac{1}{2}''$ FLAT
FORGE TO SHAPES SHOWN IN PHOTOGRAPH
$2\frac{1}{2}''$

NUTCRACKER BOTTLE OPENER. A nutcracker can be very effectively used to open the most stubborn screw type bottle caps. Do not apply much pressure else the bottle may crack.

SHAFT BEARING FROM PIPE FITTINGS. Very satisfactory shaft bearings up to ¾ in. diameter can be made with T pipe fittings. Drill the threads out and press a bronze sleeve in place, as shown. The base, also obtained from your plumbing supply house or hardware store, may be fixed or else made adjustable. Place an oil cup in the top so the T bearing can be lubricated.

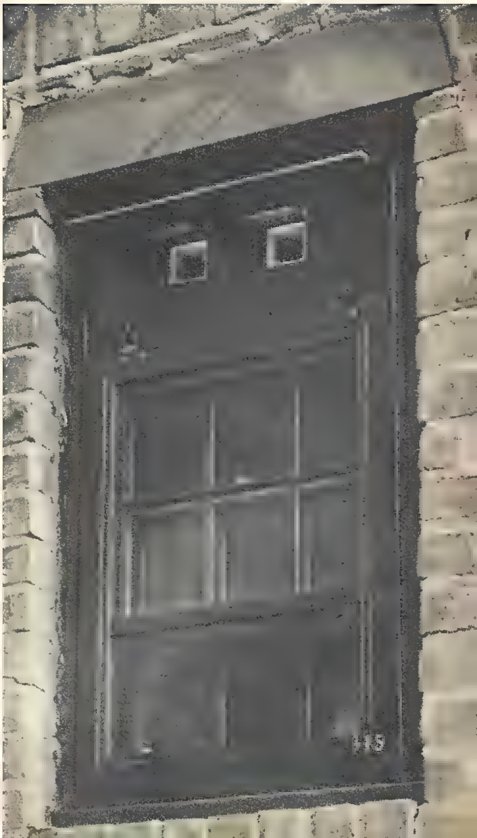

SHAFT BEARINGS FROM PIPE FITTINGS
OIL CUP
TEE
LONG NIPPLE
FLOOR FLANGE
OIL CUP
BRONZE BUSHING PRESSED IN
SHAFT
NIPPLE
THREADS OF TEE BORED OUT AND BUSHING INSERTED
ADJUSTABLE BASE
WELD


$\frac{7}{8}$" X 8" BOARD


PLYWOOD STRIP ACTS AS SNOW CATCHER
WALL
COVER FLAPS OPEN WHEN MOTOR IS ON
SCREW TO WINDOW FRAME
DOUBLE VENTILATOR
SHORTENED SCREEN OR STORM WINDOW

KITCHEN VENTILATOR. One of the best uses for the small turbine-type aluminum ventilator units now plentiful in war-surplus stores is to adapt them for kitchen duty. When mounted above a window in the manner shown, they'll cool your kitchen and rid it of the bothersome cooking odors.

VENTILATOR BOLTED TO BOARD



HAND KNURLING TOOL

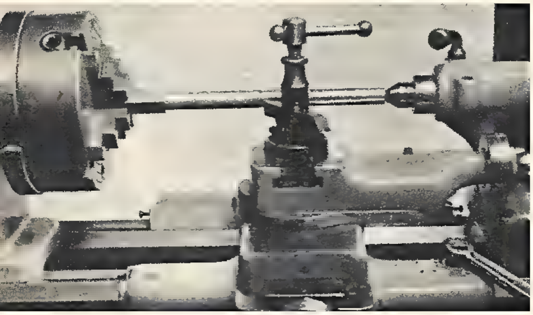
for your shop

Eliminate strain and wear on your lathe spindle bearings and prolong the life of your 60-degree tailstock center with this easily made tool.

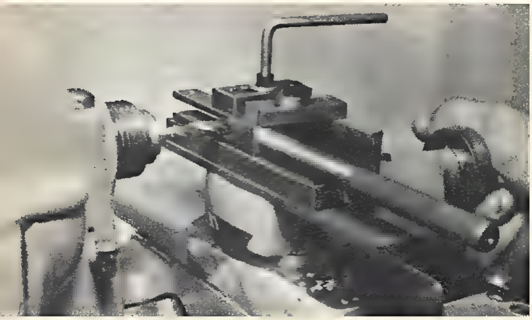
By Frank Faber

Tool Room Section Foreman
Sperry Gyroscope Company

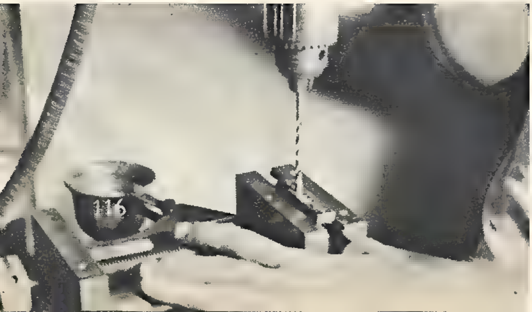
Chuck the ⅝ in. sq. bar stock in a 4-jaw and turn 6 inches of one end down to ½ in. diameter.



Clamp the handle stock on your compound or else use a milling attachment to mill the slot.



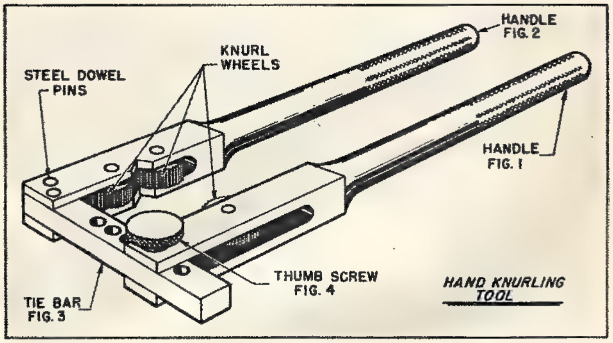
The ½x5/6x2¾ in. tie bar is also cold rolled steel drilled as indicated in the Fig. 3 drawings.

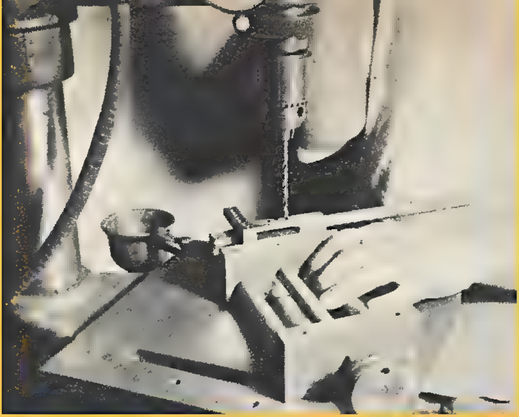


KNURLING on small bench lathes most always puts a heavy strain on the spindle bearings. What's more, this operation does not help to prolong the life of your 60-degree tailstock center. Egg-shaped and scored center holes also result from using the conventional tool post knurls, especially after the knurl wheels have become dull. These holes in turn can give lots of trouble, particularly if they are needed in future operations.

The hand knurling tool described in this article will eliminate all the aforementioned hazards and, with a bit of practice, anyone can produce perfect knurls. By gradually squeezing the handles together and applying a slight pressure toward the head or tailstock, a knurl is easily made. For use on different size diameters, a thumb screw and tie bar arrangement permits moving the handles closer together or further apart to accommodate the work.

The two handles, Fig. 1 and 2, are made from ⅝ in. sq. x 9 in. long cold rolled steel. First, center each on both ends, either in





Drill and ream the holes for the knurl wheels to 7/32 in. diameter. Press dowel pins in place.

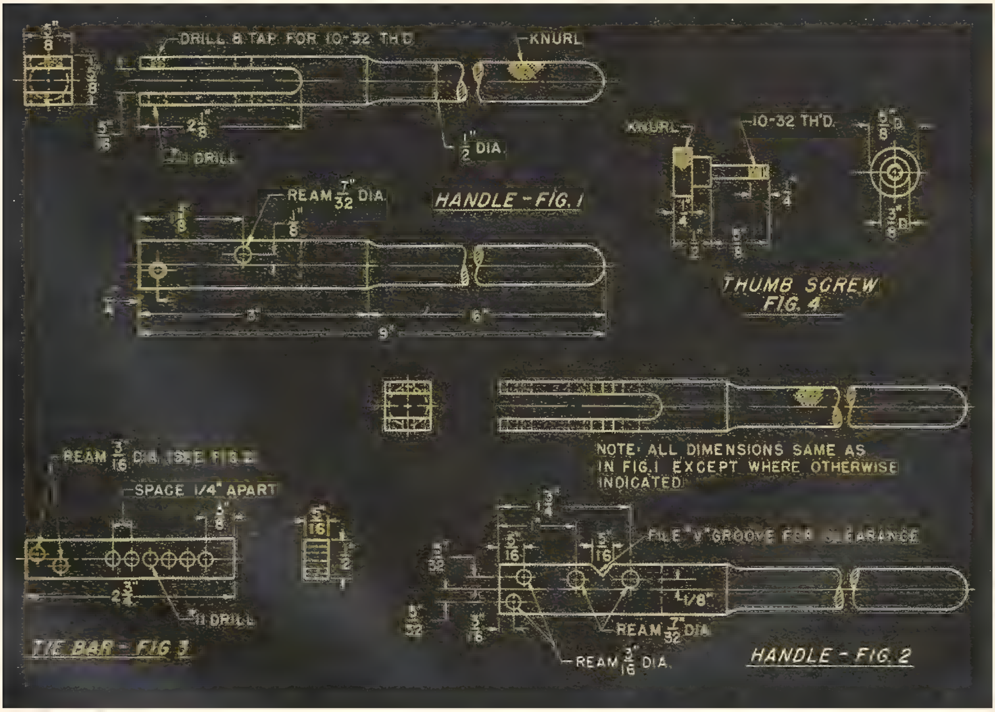
The completed tool in use. Squeeze the handles tightly together and you're off to a perfect knurl.

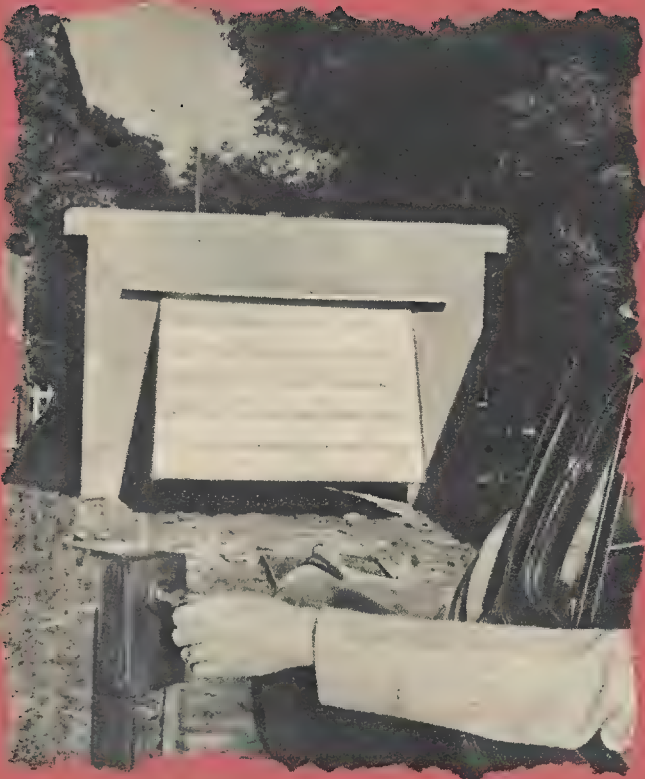
the lathe or drill press. Then, chucked in a 4-jaw, turn the ½ in. diameter handle, leaving the indicated radius at shoulder. Finally, knurl the end.

The pieces are now reversed and held on the ½ in. diameter in either a 3-jaw chuck or ½ in. collet. Drill a 19/64 in. diameter hole into the square end 2⅛ in. deep. This hole is drilled only to remove stock so that the slotting operation, which can also be done on the lathe, is made easier.

Now a $\frac{5}{16}$ in. wide slot is milled into the square end of both handles approximately 2⅛ in. deep. This can be done by using the milling attachment or you can clamp it to your compound and use an end mill to cut the slot.

A piece of $\frac{5}{16}$x½x2¾ in. cold rolled steel is needed for a tie bar, which is used to join the two handles together. This piece is standard stock size but can be sawed from $\frac{5}{16}$ in. plate steel and finish-filed to ½ in. wide and 2½ in. long. Drill six No. 11 holes into the tie bar, in the position shown. The thumb screw is made from ⅝ in. diameter steel and [*Continued on page* 140]


DRILL & TAP FOR 10-32 TH'D
KNURL
5/8"
5/8
5/16
2 1/8"
DRILL
1/2" DIA.
HANDLE - FIG. 1
REAM 7/32" DIA.
1/8"
3"
6"
9"
KNURL
10-32 TH'D.
5/8" D
3/8" D
THUMB SCREW
FIG. 4
NOTE: ALL DIMENSIONS SAME AS IN FIG. 1 EXCEPT WHERE OTHERWISE INDICATED
REAM 3/16 DIA. (SEE FIG. 2)
SPACE 1/4" APART
2 3/4"
#11 DRILL
5/16
1/2
TIE BAR - FIG. 3
FILE "V" GROOVE FOR CLEARANCE
5/16"
1/8"
5/32
3/16
REAM 7/32" DIA.
REAM 3/16" DIA.
HANDLE - FIG. 2



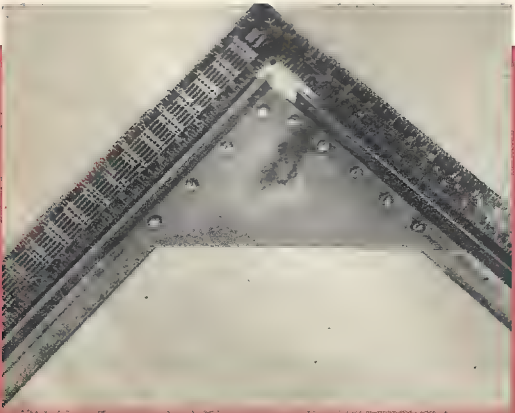
Auto-Magic GARAGE DOOR

Now, neither rain nor snow nor sleet nor darkness of night need deter you from putting your jalopy away.

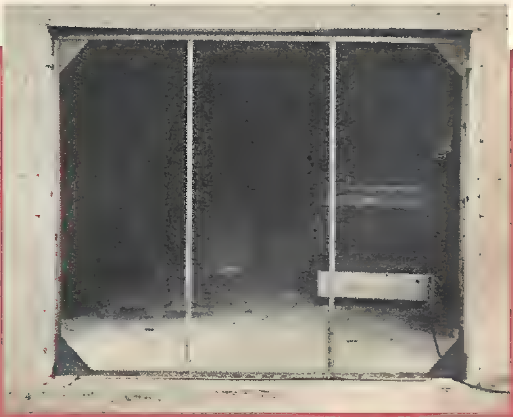
By Marylou and Peter Gerlach

DO you hate getting out of your car to struggle with a stubborn garage door on a rainy night? Install this automatic job and your worries are over—a mere flick of your finger sets it in operation.

Begin construction of the door by cutting the pieces of dural angle bar that form its frame (Fig. 1). The lengths of two of the pieces should equal the width of the door opening minus 1½ in. Two more pieces should be made the height of the door opening minus 4½ in. Following this, cut four gusset plates (Detail A). After finishing the plates by drilling the bolt holes in them, use them as templates to locate companion holes in the above-mentioned frame members. Drill and tap the companion holes and bolt the gusset



To be sure that the door frame is perfectly square, check frequently when bolting the gussets in place.



While aligning and securing the necessary fittings, wedge the uncovered frame tightly into the doorway.

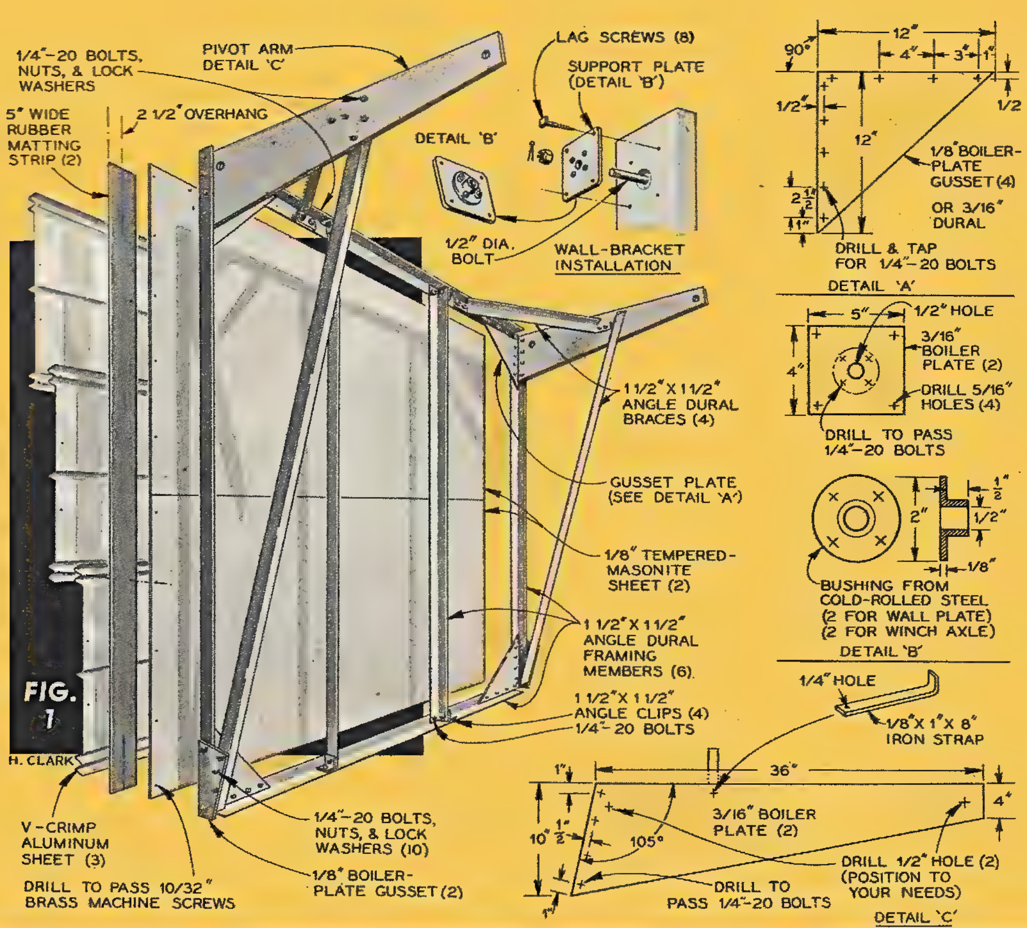
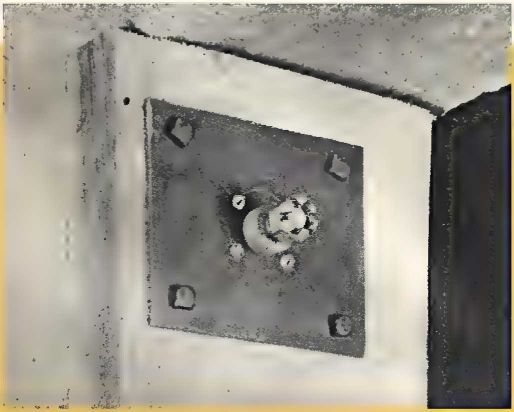


FIG. 1

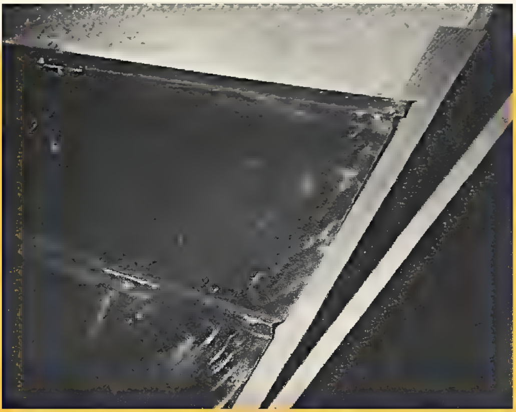
1/4"-20 BOLTS, NUTS, & LOCK WASHERS
PIVOT ARM DETAIL 'C'
LAG SCREWS (8)
SUPPORT PLATE (DETAIL 'B')
5" WIDE RUBBER MATTING STRIP (2)
2 1/2" OVERHANG
DETAIL 'B'
1/2" DIA. BOLT
WALL-BRACKET INSTALLATION
1 1/2" X 1 1/2" ANGLE DURAL BRACES (4)
GUSSET PLATE (SEE DETAIL 'A')
1/8" TEMPERED-MASONITE SHEET (2)
1 1/2" X 1 1/2" ANGLE DURAL FRAMING MEMBERS (6)
1 1/2" X 1 1/2" ANGLE CLIPS (4)
1/4"-20 BOLTS
H. CLARK
V-CRIMP ALUMINUM SHEET (3)
DRILL TO PASS 10/32" BRASS MACHINE SCREWS
1/4"-20 BOLTS, NUTS, & LOCK WASHERS (10)
1/8" BOILER-PLATE GUSSET (2)
90°
12"
4"
3"
1"
1/2"
1/2
12"
1/8" BOILER-PLATE GUSSET (4)
OR 3/16" DURAL
2 1/2"
1"
DRILL & TAP FOR 1/4"-20 BOLTS
DETAIL 'A'
5"
1/2" HOLE
3/16" BOILER PLATE (2)
4"
DRILL 5/16" HOLES (4)
DRILL TO PASS 1/4"-20 BOLTS
2"
1/2"
1/2"
1/8"
BUSHING FROM COLD-ROLLED STEEL (2 FOR WALL PLATE) (2 FOR WINCH AXLE)
DETAIL 'B'
1/4" HOLE
1/8" X 1" X 8" IRON STRAP
1"
36"
4"
10 1/2"
1"
105°
3/16" BOILER PLATE (2)
DRILL 1/2" HOLE (2) (POSITION TO YOUR NEEDS)
DRILL TO PASS 1/4"-20 BOLTS
1"
DETAIL 'C'

plates to the frame members, taking care to produce perfectly square corners. Cut two more vertical pieces of angle bar and secure them to the frame, as detailed, with angle clips and bolts. Place the completed frame in the doorway, propping it on all four sides to hold it in place as shown in one of the photos, and check for proper clearance and squareness.

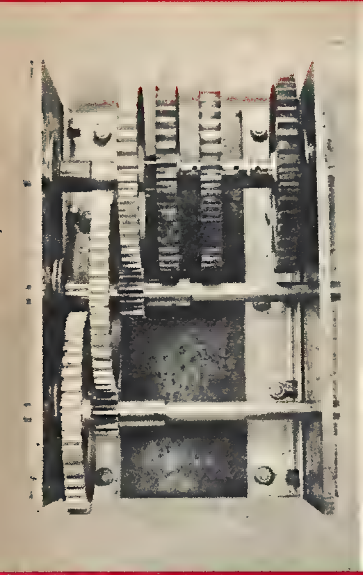
The next step is to lay out, cut, and install the two pivot arms for the door (Detail C, Fig. 1). They are bolted to the frame and the bolts are center-punched to lock them in place. Now make the wall supports (Detail B, Fig. 1) on which the pivot arms rotate to open the door. If the garage is of frame construction, you will need four plates, a pair for each side. For



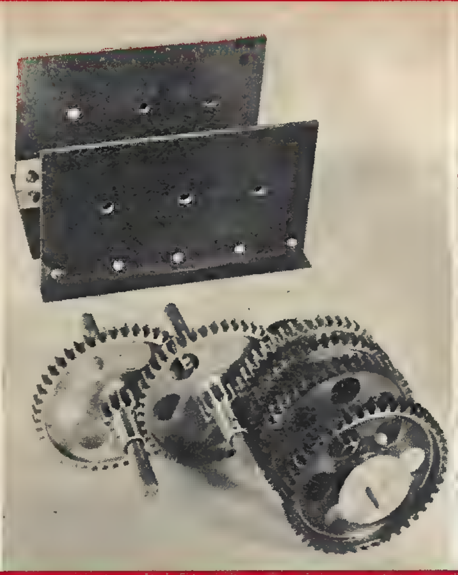
When hanging the door on the pivot bolts, washers are used as spacers to center door in its opening.



Masonite, V-crimp aluminum roofing, and two strips of rubber matting are used to make the door facing.



Assembled winch showing shafts and gears. Extra gears on top could be plain disks instead.



Before assembly, the shafts, gears, and gear housing that form the winch look like this.

When the door is closed, the sliding block on the automatic switch, top, is all the way up.

a masonry garage, you'll need but one on each side because the pivot bolts will be embedded in cement.

After the wall supports are completed, lay out their positions by pencilling through the pivot-arm holes to locate the pivot points on the jambs. Using each mark as a center, lay out the other holes to be bored in the jambs. It is extremely important that the wall supports be installed in a careful manner, making sure they are anchored properly, for the entire weight of the door will rest on these supports. Run the pivot bolts through the pivot arms into the supports; then put a washer and lock nut over each of the bolts.

Next, install the four diagonal door-frame braces—two running from the pivot arms to the top horizontal member and the other two from the pivot arms down to gussets fastened at the bottom corners of the frame.

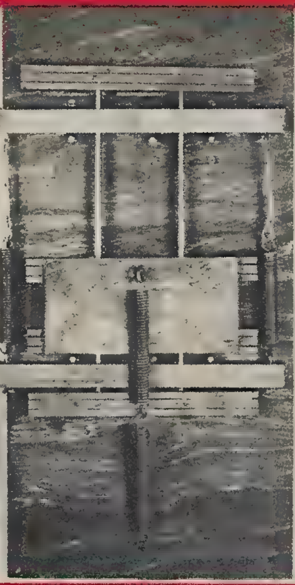
The frame is covered with ⅛-in. tempered Masonite and V-crimp aluminum roofing, which are secured to the vertical frame members with closely spaced machine screws. Strips of rubber matting go between the layers and project 2½ in. beyond the vertical edges of the door in order to form watertight seals against the door jambs when the unit is closed.

This completes the door proper. The various controls are now installed, starting with the rollers (Fig. 2) on which the lifting cables travel. One roller goes at each side on the inside face of the door frame 34 in. below the pivot bolt. A second set of rollers is installed 4 in. above the top of the door frame, as shown in Fig. 2. If you can't obtain war-surplus units to use here, you can make up satisfactory ones employing Boston Gear No. 2008 rollers.

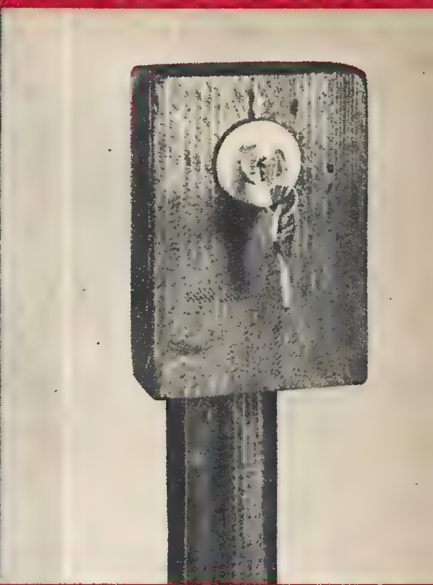
To lift the door, you'll need a winch. Make the body of ¼-in. boiler plate and 1½x1½-in. angle bar. The drive shafts are ½-in. drill rod to which the gears are keyed or brazed. Both ends of each shaft are drilled for cotter pins. The gears give a reduction of 20 to 1, consequently a 1/10-hp motor is ample for the power unit. Gears for the unit shown were picked up around the shop, however Boston Gears No. GB-20 and GB-80 can be combined with a compound steel bushing (No. GBB-16) to work in the same ratio. The drive-shaft holes in the body should be drilled through both plates at the same time to insure their matching. Two flange sockets (Detail B, Fig. 1) are needed on the final or cable-spool shaft to take the load. The motor driving the winch must be one that can be reversed by means of a double-pole, double-throw switch arrangement.

A control board is needed to group the six switches that automatically govern the door movements. This is shown in Fig. 3. A pair of springs connects the ends of the hardwood sliding battens, holding them against the pull of the center sliding block until the door starts to move. As soon as

Here's what the installation looks like when the action is reversed and the door is open.



Close-up of the control panel. The six-toggle setup has been proven under actual operation.



A key-type waterproof driveway switch is used to discourage petty thieves and other pests.

the door starts upward, the sliding block moves downward, permitting both single-pole switches to be drawn inward toward the center of the panel. When the door reaches its uppermost position, the block forces the lower set of switches downward, thus stopping the motor and at the same time setting it in reverse so when the next contact is made the door will close. The driveway switch acts only to apply current to start the motor; so the key should be withdrawn the [*Continued on page* 142]

FIGURE 2

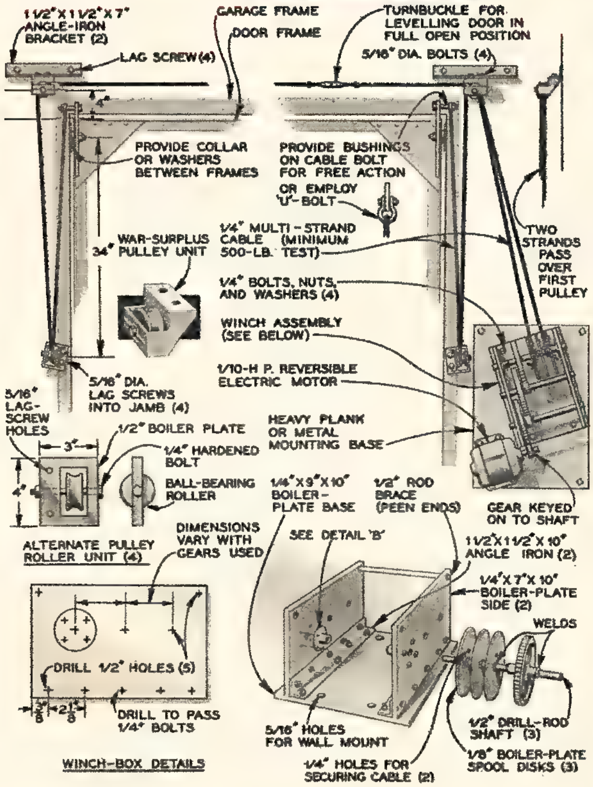
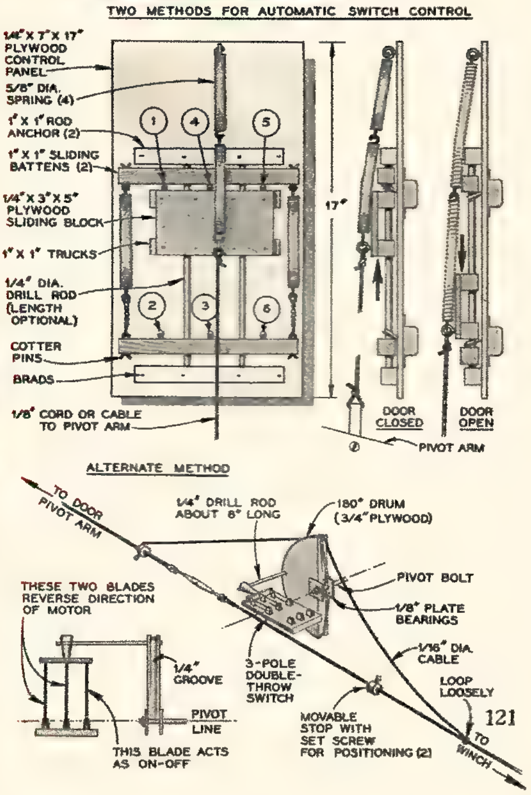
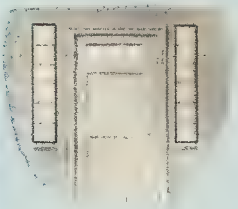

1 1/2" X 1 1/2" X 7" ANGLE-IRON BRACKET (2)
LAG SCREW (4)
GARAGE FRAME
DOOR FRAME
TURNBUCKLE FOR LEVELLING DOOR IN FULL OPEN POSITION
5/16" DIA. BOLTS (4)
4"
PROVIDE COLLAR OR WASHERS BETWEEN FRAMES
PROVIDE BUSHINGS ON CABLE BOLT FOR FREE ACTION
OR EMPLOY 'U'-BOLT
34"
WAR-SURPLUS PULLEY UNIT
1/4" MULTI-STRAND CABLE (MINIMUM 500-LB. TEST)
TWO STRANDS PASS OVER FIRST PULLEY
1/4" BOLTS, NUTS, AND WASHERS (4)
WINCH ASSEMBLY (SEE BELOW)
1/10-H P. REVERSIBLE ELECTRIC MOTOR
5/16" DIA. LAG SCREWS INTO JAMB (4)
5/16" LAG-SCREW HOLES
1/2" BOILER PLATE
3"
4"
1/4" HARDENED BOLT
BALL-BEARING ROLLER
HEAVY PLANK OR METAL MOUNTING BASE
1/4" X 9" X 10" BOILER-PLATE BASE
1/2" ROD BRACE (PEEN ENDS)
GEAR KEYED ON TO SHAFT
ALTERNATE PULLEY ROLLER UNIT (4)
DIMENSIONS VARY WITH GEARS USED
SEE DETAIL 'B'
1 1/2" X 1 1/2" X 10" ANGLE IRON (2)
1/4" X 7" X 10" BOILER-PLATE SIDE (2)
WELDS
DRILL 1/2" HOLES (5)
3/8
2 1/8
DRILL TO PASS 1/4" BOLTS
5/16" HOLES FOR WALL MOUNT
1/2" DRILL-ROD SHAFT (3)
1/4" HOLES FOR SECURING CABLE (2)
1/8" BOILER-PLATE SPOOL DISKS (3)
WINCH-BOX DETAILS

FIGURE 3

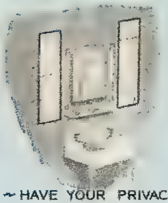

TWO METHODS FOR AUTOMATIC SWITCH CONTROL
1/4" X 7" X 17" PLYWOOD CONTROL PANEL
5/8" DIA. SPRING (4)
1" X 1" ROD ANCHOR (2)
1" X 1" SLIDING BATTENS (2)
1/4" X 3" X 5" PLYWOOD SLIDING BLOCK
1" X 1" TRUCKS
1/4" DIA. DRILL ROD (LENGTH OPTIONAL)
COTTER PINS
BRADS
1/8" CORD OR CABLE TO PIVOT ARM
①
④
⑤
②
③
⑥
17"
DOOR CLOSED
DOOR OPEN
PIVOT ARM
ALTERNATE METHOD
TO DOOR PIVOT ARM
1/4" DRILL ROD ABOUT 8" LONG
180° DRUM (3/4" PLYWOOD)
PIVOT BOLT
1/8" PLATE BEARINGS
THESE TWO BLADES REVERSE DIRECTION OF MOTOR
1/16" DIA. CABLE
1/4" GROOVE
3-POLE DOUBLE-THROW SWITCH
LOOP LOOSELY
PIVOT LINE
MOVABLE STOP WITH SET SCREW FOR POSITIONING (2)
THIS BLADE ACTS AS ON-OFF
TO WINCH

Ugly door, upper right, was replaced with glass brick.

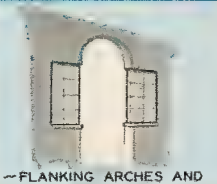
SMALL-AREA TREATMENT WITH GLASS BRICK CAN BRIGHTEN AND DECORATE THE HOME



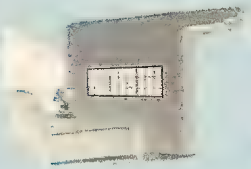
FLANKING FRONT ENTRANCE FOR BRIGHTER HALLWAYS



HAVE YOUR PRIVACY WITH EXTRA LIGHT



FLANKING ARCHES AND INTER-ROOM PASSAGES



INTERIOR WALL WITH NO WINDOW

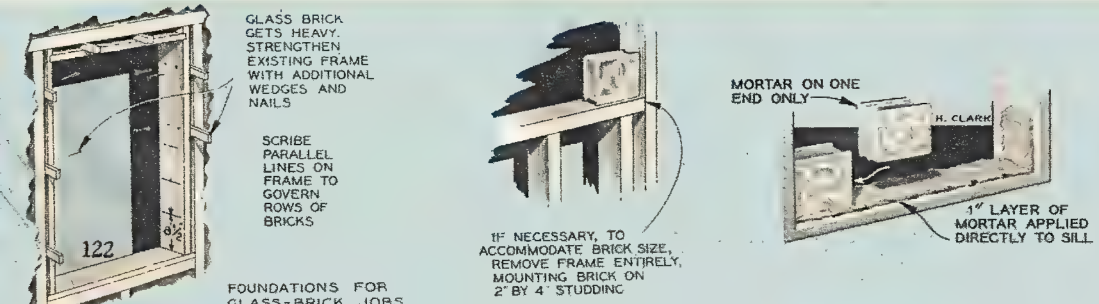
Modernize with GLASS BRICK

By Marylou and Peter Gerlach

YOU can, like we did, add a modern touch to your home by installing some glass brick. Its modular adaptability to existing door and window frames makes its installation surprisingly easy.

After redecorating our reception hall, we still had an ugly door at the head of the stairwell—a leftover from a long-since-removed balcony—which, no matter what we did in an effort to hide it, spoiled the general effect. It did, however, serve the function of brightening the upper stairs when it was left open; so we decided to remove it and fill in the space with glass brick.

There are a number of designs available.



GLASS BRICK GETS HEAVY. STRENGTHEN EXISTING FRAME WITH ADDITIONAL WEDGES AND NAILS
SCRIBE PARALLEL LINES ON FRAME TO GOVERN ROWS OF BRICKS
8½
IF NECESSARY, TO ACCOMMODATE BRICK SIZE, REMOVE FRAME ENTIRELY, MOUNTING BRICK ON 2" BY 4" STUDDING
MORTAR ON ONE END ONLY
H. CLARK
1" LAYER OF MORTAR APPLIED DIRECTLY TO SILL

FOUNDATIONS FOR GLASS-BRICK JOBS

1 Method of estimating necessary space between bricks (to be filled in later with mortar).

2 Use a carpenter's square or straightedge to make sure that each course of bricks is level.

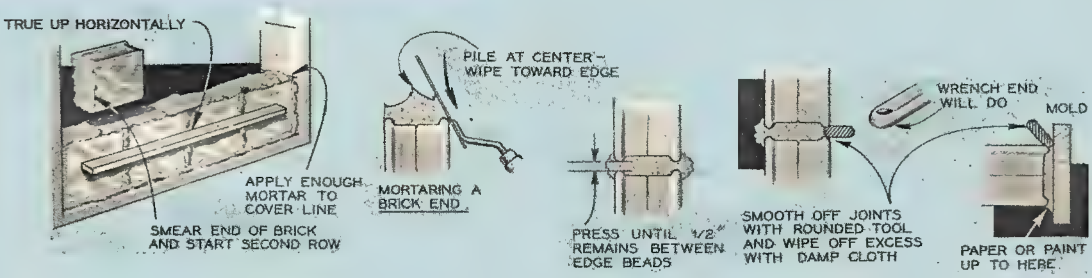
3 Here a brick has been properly coated and is being affixed to the previously laid bricks.

4 Finishing nails serve to anchor each course of glass bricks properly to the house frame.

as well as two different sizes. We chose a wavy finish in the 4x7¾x7¾-in. size. The first step was to take the door from its hinges; then we removed the molding and trim from the door jambs. We next strengthened the door frame by copiously nailing the jambs, sill, and header to the existing two-by-fours.

The procedure for applying the brick is straightforward. Lay the first course on the sill and space the bricks out equally to determine the sizes of the joints to be filled with mortar; then, to ascertain the space between rows, mark off on each door jamb lines parallel to the floor at 8½-in. intervals. [*Continued on page* 142]

5 After installing each course, make sure that it is perfectly plumb with previous courses.


TRUE UP HORIZONTALLY
APPLY ENOUGH MORTAR TO COVER LINE
SMEAR END OF BRICK AND START SECOND ROW
PILE AT CENTER-WIPE TOWARD EDGE
MORTARING A BRICK END
PRESS UNTIL 1/2" REMAINS BETWEEN EDGE BEADS
WRENCH END WILL DO
SMOOTH OFF JOINTS WITH ROUNDED TOOL AND WIPE OFF EXCESS WITH DAMP CLOTH
MOLD
PAPER OR PAINT UP TO HERE

CAR CARE

Photo by Robert Brightman

When you can no longer adjust the clutch pedal for the usual 1 in. of free pedal play, you will know that the clutch plate lining is worn out and that a replacement is in order. No need to be fooled here.

Slow starts may be due to late ignition timing. Sluggish firing gums up the engine for further delays. A too advanced spark will also cause trouble through pre-ignition and backfiring.

The overrunning starter drive clutch should not be cleaned in a degreasing agent. It is packed in grease.

Hard shifting with older cars is often due to wear on the gear teeth or because of gummy lubricant.

Gas leakage between the center electrode and the porcelain of a spark plug may raise temperature of its points sufficiently to burn them.

Apparent lack of power may be due to the floor covering being bunched up under the accelerator pedal.

Doors squeak? Most often striker plate is to blame. A grease stick is the answer, but in a pinch, just rub some soap on latches and strikers.

Slow starting may be due to loosening of the nut which holds the battery cable to the starting motor. Brighten nut and lug before tightening.

Rubber floor mats come in mighty handy for slipping under a spinning rear wheel. Your best bet, however, is chains when streets start to ice up.

BEHIND THE WHEEL

With Fred Russell

What causes a rapid clicking noise in my 1947 Studebaker when I take my foot off the gas? Lionel Correia, Chicago, Ill

That clicking noise you hear seems to indicate loose tappets.

I have installed a new motor including carburetor, points, plugs and clutch in my 1930 Ford, and yet I still get less gas mileage than I did before. George Braddish, Uledi, Pa.

Low gas mileage may be due to need for retiming the ignition, also carburetor float level may be too high.

What is the trouble with my 1948 Hudson; I am unable to get more than 10 mpg. P. R. Mounts, Frederick, Okla.

Under separate cover we are sending you a special article which will tell you how to increase your gasoline mileage.

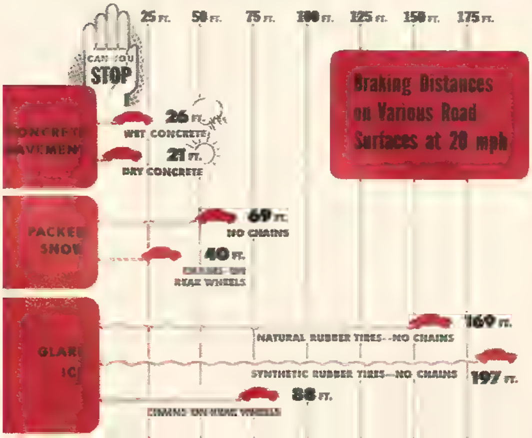
After 15,000 miles I replaced a slipping clutch in my 1946 Buick, and now, after 3 months, a chattering is developing in the clutch when I start in first gear. It is especially noticeable in damp weather. Frank De Buono, West Haven, Conn.

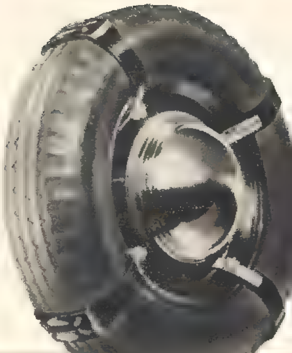
You evidently have an inferior lining on your clutch plate; sensitivity to moisture indicates this too.

My 1948 Packard yields excellent performance after the points have been cleaned and adjusted. Then, after 200 miles, performance drops about 3 or 4 miles less per gallon. Would platinum ignition points help? George P. Metesky, Waterbury, Conn.

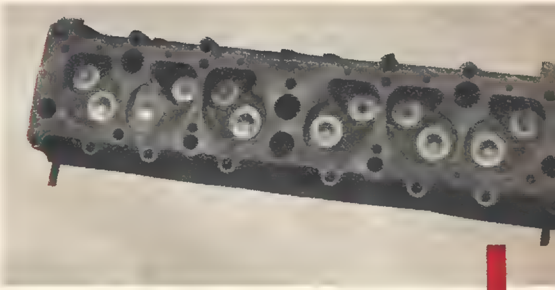
Doubt whether special breaker points would help you. Packards have always been very sensitive to breaker point adjustments.

EASE UP IN A FREEZE-UP. The National Safety Council has released the chart below showing the need for especially careful driving in the winter.

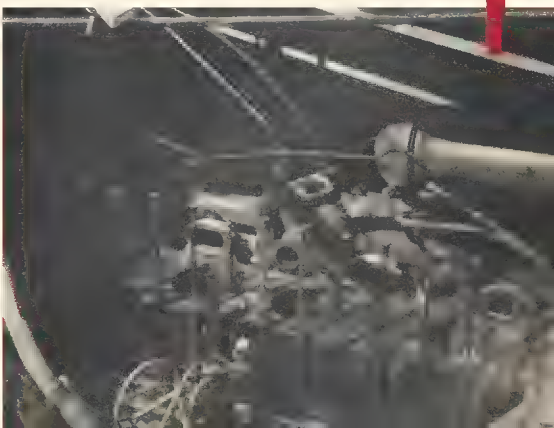




These emergency "chains" are made of rubber. Band passes around wheel and is tightened by drawing up on a lock nut with a screwdriver; called "Individuals."



This owner has really done a good job on Chevrolet head. Carbon was removed with aid of scratch brush mounted on electric drill. Valve springs should have a tension of 42 pounds up to 1939 models and 54 pounds on 1940-49 jobs. Set tappets (hot) at .006 for intake and .013 for exhaust.



Monthly Photo Contest

Please put your name, address and picture-taking data on back of each print. Wrap with cardboard stiffeners and enclose a self-addressed stamped envelope or postage for return of unused photos. Prize-winning pictures are not returned. Judges are MI Editors. Duplicate prizes awarded in case of tie. Address: Monthly Photo Contest Editor, MECHANIX ILLUSTRATED, 67 W. 44th Street, New York 18, N. Y.

① **First Prize ($10.00)** ....**The Blow Note**
To Ted Rozumalski of Milwaukee for capturing this moment of anguish in a musician's life.

② **$5.00 Award** ....**Study in Glass**
Richard Fabian of Chicago used a Graflex loaded with Plus X; 1 sec. at f-32, spotlight shot.

③ **$5.00 Award** ....**Glamour Puss**
A 4x5 Graphic photo by Walter Chandoha of Astoria, L. I. Supreme film; flash, 1/200 and f-22.

④ **$5.00 Award** ....**Madonna in Concrete**
This is a double exposure job by Jack Pelletier of Los Angeles; hole in head is part of wall.

photo kinks

Lamp Holder. It's most disconcerting to find yourself without a spare for enlarger or spotlight when one of these lamps burn out. To avoid this, purchase a tool clip board and use it as shown at the right.

Tiny Tripod. A metal base, such as used by photo stores to display cameras, may be used as a tripod for close-up shots. The studs fit all standard sockets.

QUESTION BOX

How can I change a color transparency into a negative? Lloyd Vyse, Case City, Mich.

Place the transparency in contact with a slow panchromatic film, emulsion to emulsion. Expose to light briefly (try ½ second at 5 ft. with a 5-watt lamp), and develop. Now you have a negative and with it you can make enlargements or contact prints.

Can you inform me how to copy a print? Ronald Zunk, Brooklyn, N. Y.

Use two lights, one on each side of the picture. With two 100-watt lamps placed about 3 ft. from the print, the average exposure for panchromatic film should be about 5 seconds at stop f-16.

Is it possible to use a filter on a box camera? James Lott, Thorold, Can.

Yes.

I have a Kodak 35. Can I use it as part of an enlarger? R. T. Leslie, Toronto, Can.

No. In order to use a camera as part of any enlarger system, the lens should be able to be racked back and forth about 2 in. This is not possible with this model.

I am in need of plans for a simple means of projecting images from 16mm movie film. John A. Mitchell, Jr., Asheboro, N. C.

We do not have any such plans. You can project 16mm films in a regular 35mm slide projector by masking. If you want to make a special 16mm still film projector, use a lens having a focal length of about 2 in.

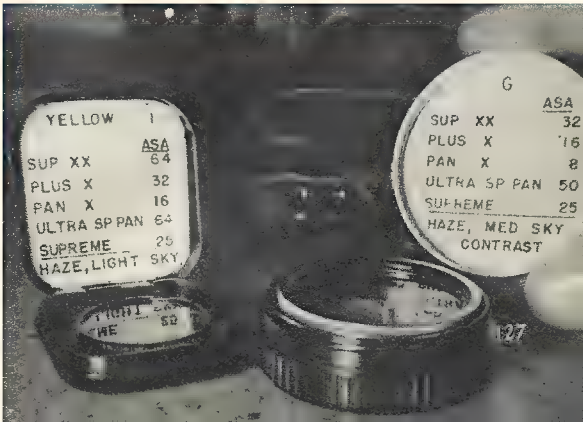
I have a No. 2C Series III Kodak with a Diomatic shutter and f-6.3 lens. How old is it? Can I use color film in it? C. W. Caldwell, Baltimore, Md.

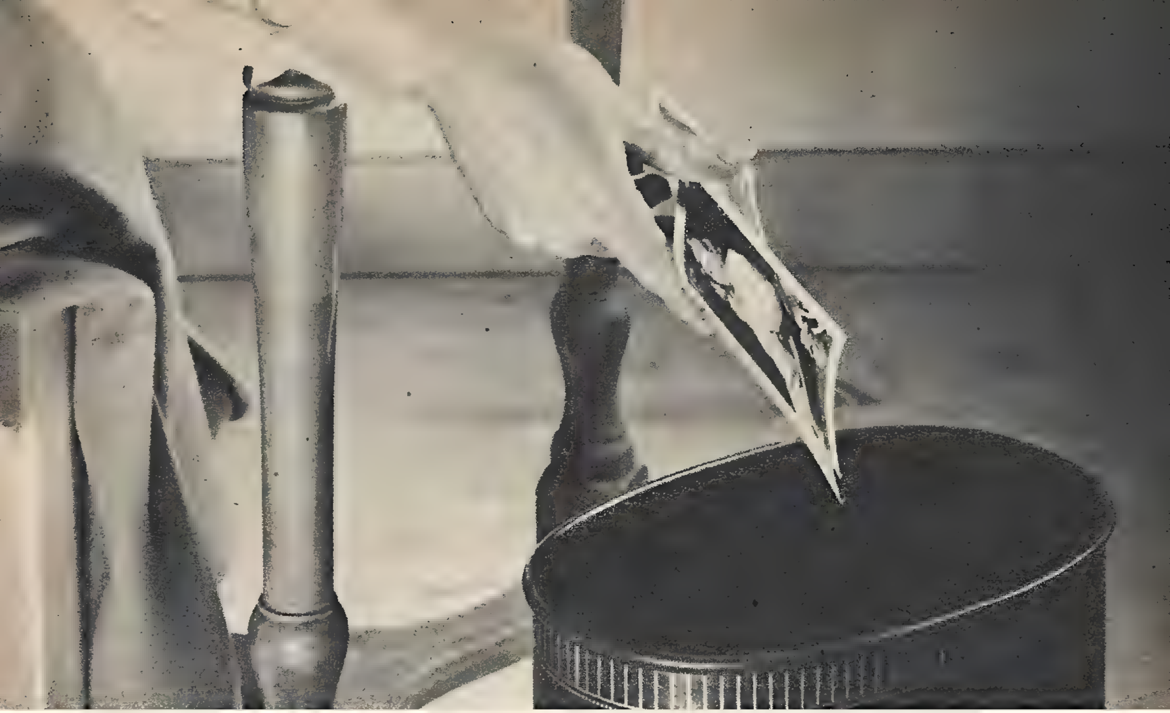
Your camera is at least 15 years old, probably more. Color film is not made in this size.

On my Elmar lens the distance markings are in meters. What does this mean in feet? Larry Paikin, Hamilton, Can.

One meter is the equivalent of 40 in.

Data Holder. Since filter factors vary with each type of film used, it is a good plan to keep the necessary data right with the filter. Best place is to mount it in cap of the box. See photo at right.





What To Do With Your Pictures

To assure attractive pages, first lay the pictures loosely on the page to determine best position.

Putting them in the wastebasket is no solution, except if they are really bad. Have you considered an album?

By H. Bezold

IN our house we *used to have* a problem which may be somewhat similar to one you now have in yours!

Know what it was? It was negatives, prints, pictures! What were we to do with them? Here we were, sold on photography, getting the world's biggest bang out of taking pictures of the youngsters, scenes, still-life, and what have you—and then never doing anything with our pictures.

The negatives began to pile up—drawers full of them. Prints began to spill out of cupboards when we opened doors. When we wanted to look at a print, or show it to somebody—well, we never could find it. But now! Ah, what a change!

The reason why this case of "paradise found" has come to our home is simple. We sat down one night and took stock of our situation. "This," we said, "is getting

An easy and lasting method of mounting snapshots in your album is to use dry mounting tissue and a mounting iron. Prints may be removed with heat.

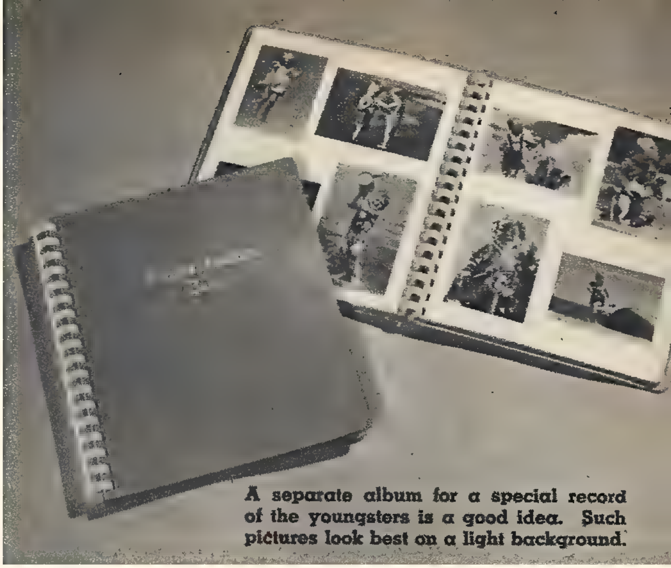
out of hand and now is the right time to do something about it."

Albums—good, snappy, up-to-date albums—were the answer we found best met our needs for most pictures. We learned that by applying a little imagination to picture layout—and by juggling print size so that not all of the prints on a page were the same size, or laid out in the same manner—we produced the most interesting effect. We discovered, too, that having all of our pictures in albums is a convenience and a matter of pride. We find it easy to locate pictures we want to show friends—and we get a tremendous amount of satisfaction and pride from showing them in such a manner.

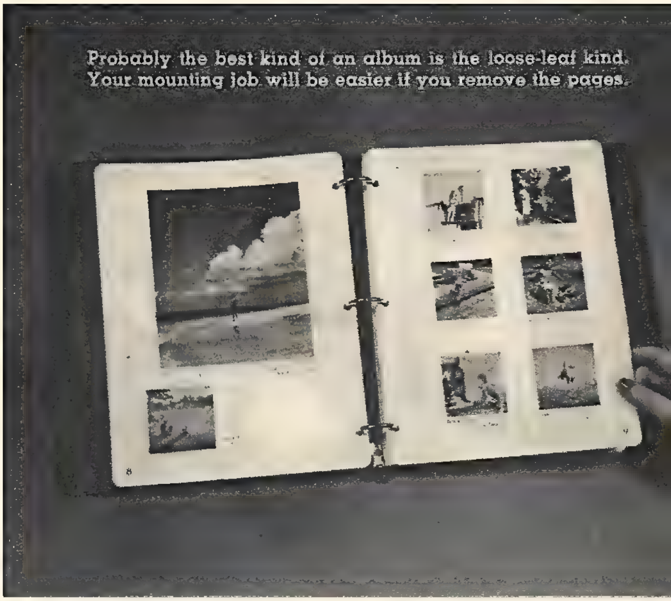
Big enlargements, of course, don't fit into picture albums like small prints. Nobody expects them to. But a friend taught us a storage trick which is really neat. This friend takes two of the heavy cardboard stiffeners which are packed in envelopes of enlarging paper, and tapes them together along one side with a wide strip of adhesive tape. That gives him a rough folder into which big enlargements can be slipped.

Then he mounts an attractive print on the front cover. Within such a folder you'll find you can store a dozen prints—or even two dozen or more—and keep big enlargements flat, always available, and ready for instant showing.

But here's just one note of warning—a set-up like ours isn't an overnight matter. You can't say, "I'll do it," and have it complete before dawn. You'll have to put some thought, time, and a little work into getting your pictures organized and collected in this way. But whatever time it takes—and whatever the effort required—you'll find, in the long run, that it will pay off splendidly. We know! •

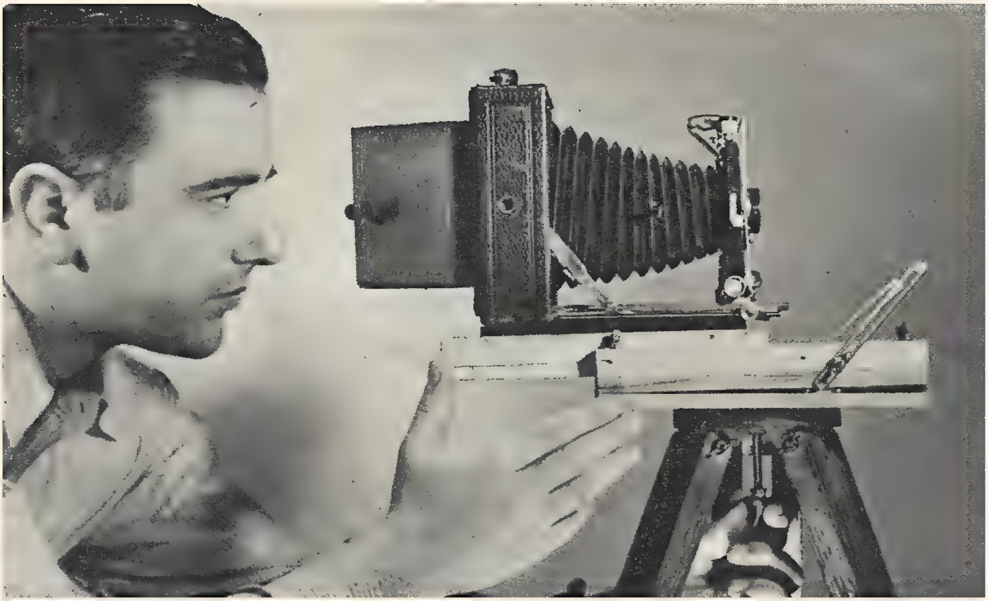


A separate album for a special record of the youngsters is a good idea. Such pictures look best on a light background.



Probably the best kind of an album is the loose-leaf kind. Your mounting job will be easier if you remove the pages.

Prints kept in an orderly album are a pleasure to show. The author devotes one day a month to this work.



SLIDING RACK TILT-TOP

You'll never know how versatile your ground glass camera really is until you make this intriguing accessory.

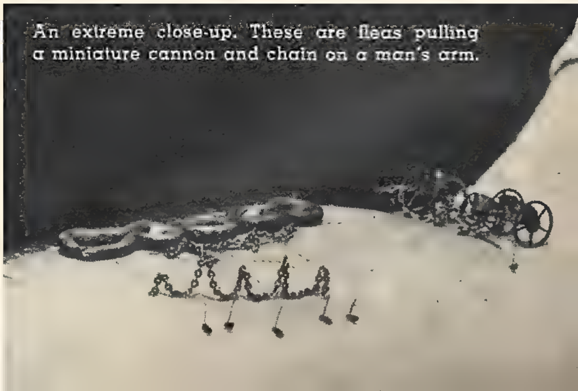
By Louis Hochman

With pan head constant shifting is required be- [illegible] correct proportions [illegible] are obtained.

THIS Sliding Rack Tilt-Top is an amazing accessory. It endows your plate camera with many of the exclusive features found only in expensive view cameras. With it, you can save yourself many hours of awkward tripod manipulations, and simplify the taking of difficult subjects.

One of the main features that this accessory offers your camera is the ability to focus with the camera back instead of the lens! It holds the lens tightly clamped in a fixed position so that when the focus-

[illegible] this accessory, [illegible] at fixed [illegible] camera back [illegible] and fro.



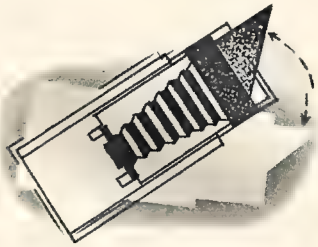
An extreme close-up. These are fleas pulling a miniature cannon and chain on a man's arm.

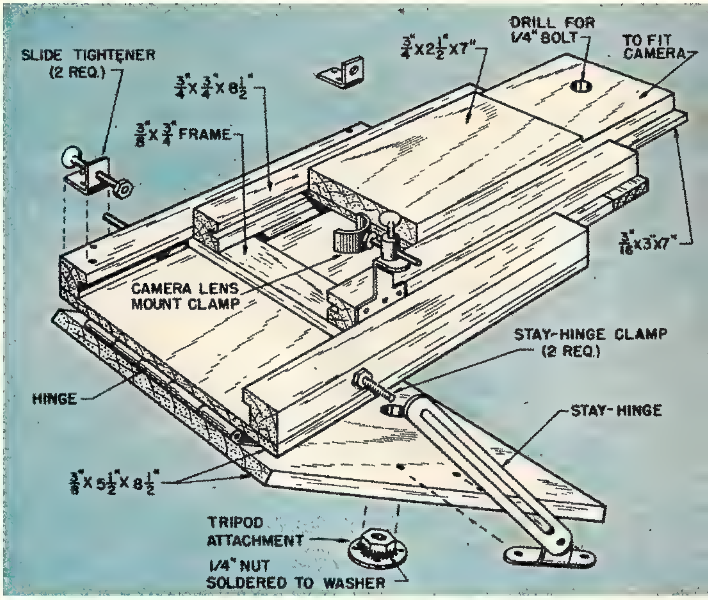
ing knob is turned, the camera back moves instead of the lens! Those of you who do a great deal of close-up work can appreciate the importance of this feature. By focusing in this manner, the distance between lens and subject matter always remains constant, thus permitting the image to be brought to a sharp focus without unduly affecting its size, as would happen if the back remained fixed, and the lens moved toward the subject.

Another unique feature—it permits you to slide the camera forward as much as 13 in., without losing the focus on your subject matter! Thus, once you have your subject situated properly before the camera lens, you can make as many delicate forward or backward adjustments as you like within this line of view.

The sliding feature of the tilt-top offers another advantage to panorama photographers. It is essential to pivot the camera on its lens so that the separate exposures will match perfectly when joining them up. Ordinary tilt-tops or pan heads have no provision for this, but with the Sliding Rack Tilt-Top, it is a simple matter. Just slide the camera back until its lens is directly over the tripod screw, and lock it in place. Focusing the camera will not alter the position of the lens, since it is held

[*Continued on page* 144]




SLIDE TIGHTENER (2 REQ.)
$\frac{3}{4}$"x$\frac{3}{4}$"x8$\frac{1}{2}$"
$\frac{3}{8}$"x$\frac{3}{4}$" FRAME
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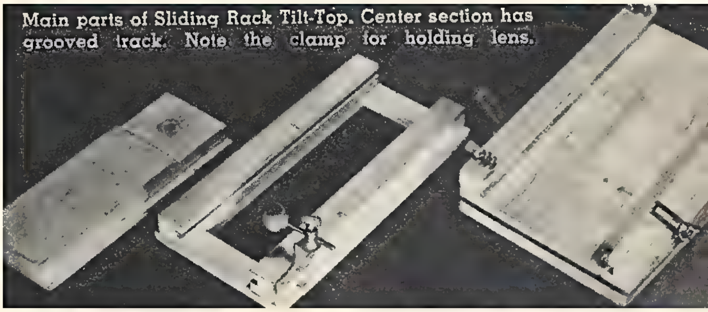
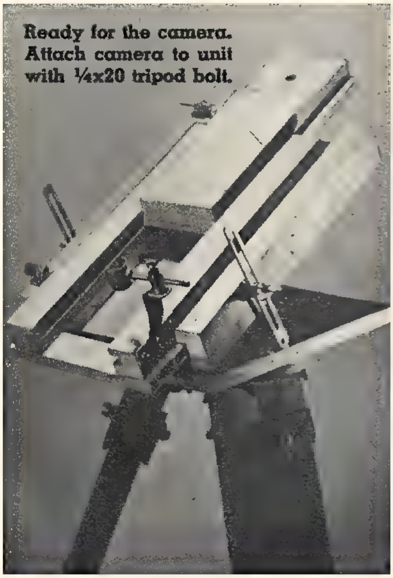
DRILL FOR 1/4" BOLT
TO FIT CAMERA
$\frac{3}{16}$"x3"x7"
CAMERA LENS MOUNT CLAMP
STAY-HINGE CLAMP (2 REQ.)
HINGE
STAY-HINGE
$\frac{3}{8}$"x5$\frac{1}{2}$"x8$\frac{1}{2}$"
TRIPOD ATTACHMENT
1/4" NUT SOLDERED TO WASHER


Main parts of Sliding Rack Tilt-Top. Center section has grooved track. Note the clamp for holding lens.


Ready for the camera. Attach camera to unit with ¼x20 tripod bolt.

Camera is brought to subject by sliding main section down. Focus from rear.

Strange Facts About Sleepwalking

[*Continued from page* 61]

can't hear ordinary sounds and have no sense of taste or smell. But they do have remarkable control over their muscles and can do many things that would seem impossible for them were they awake.

You've heard incredible stories about people who have walked on rooftops in their sleep without ever making a false step. Well, many of them are true! Sleepwalkers have a heightened sense of balance and touch that enables them to perform feats they would never attempt if awake. Because they do not have their waking awareness of the situation, they may also show unusual courage.

You've heard, too, that it's dangerous to awaken a sleepwalker. It isn't, unless, of course, he is perched on a window ledge or some other high place. If he were suddenly awakened, then he might be startled when he realized his precarious position and lose his balance.

Sleepwalkers, like hypnotized people, are very receptive to suggestion. It's usually easy to lead them back to bed with a few quiet words. The reason is that the subconscious mind is accustomed to being governed by the conscious mind. In hypnotism, the hypnotizer lulls the subject's conscious mind to sleep and takes over its position of authority. In somnambulism, the conscious mind is already asleep. The subconscious is willing to take orders from a wide-awake guide, if they're gently but firmly delivered and don't conflict too strongly with the sleepwalker's own desires.

Though it's ordinarily not dangerous to awaken the average sleepwalker, it's sometimes extremely difficult. A man named Matthew Lukaszewski fell from a second-story window, rolled off the awning that broke his fall and broke his wrist. Relatives in the house woke up and went after Matthew. He was five blocks away before they caught up with him. Only then, after they had shaken him and called to him, did he return to consciousness.

Every year, our newspapers report some half-dozen sleepwalking accidents—three or four of them fatal. But psychologists question whether all these cases may properly be called accidents. The subconscious mind, which rules the body in sleepwalking, has powerful urges which are not always known to the conscious mind. Some fatal sleepwalking accidents may be suicides, committed without conscious intent but under the strong dictates of the subconscious.

The question of the sleepwalker's responsibility for his actions is a difficult legal point. In a famous Italian case of the last century, a husband dreamed of finding his wife, who was lying by his side, in an act of infidelity. He wounded her gravely with a dagger. His lawyer successfully defended him by arguing that no one could be held accountable for acts committed in his sleep.

This defense was not admitted, however, in a case a few years ago in which a young American woman killed her illegitimate child during an attack of sleepwalking. She was sentenced for murder on the grounds that she could not have committed the act without having premeditated it while she was awake.

Dr. Maurice Chideckel cites a case that points out a sleepwalker's curious awareness. A patient got up in his sleep and carefully wrote a batch of checks to pay for current bills. But when his wife put a blank check before him and urged him to sign it, he refused to notice the check or pay any attention to her suggestion.

A hypnotized person cannot be made to do anything against his moral code. In the same way, the sleepwalker—considered by many psychologists to be an example of self-hypnosis—acts only within the limits of his basic desires. But often these desires are revealed only when the subconscious takes over.

Dr. Chideckel tells of a 16-year-old girl whose sleepwalking clearly revealed a suppressed emotional conflict. She got up in her sleep, went to her desk and began to write a letter to a boy she secretly loved. She put the letter in the desk drawer. Then, as her parents watched anxiously, she walked to another room and fell exhausted on a cot. On awakening, she had no idea how she got into that room. The next night she got up again, found the letter in the desk and started writing where she had left off.

Sleepwalkers often take on a strange night personality quite foreign to their waking nature. At Camp Lee, Va., Lieutenant Colonel Samuel A. Sandler studied 22 Army men who walked in their sleep.

"The night personalities of these men were in marked contrast to their gentle dispositions during the day," he reports. "They were argumentative and hostile, which was probably indicative of their basic character. . . . One man started a fight with a guard, knocked him down and thereby risked being shot."

Most neurotics have a broken home as one of the factors in their personality troubles. Surprisingly, these Army sleepwalkers had no such history in their background. Their

[*Continued on page* 134]

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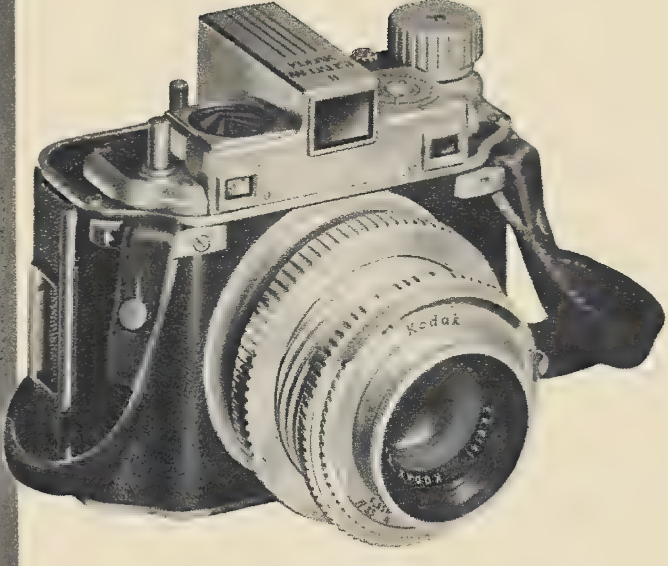

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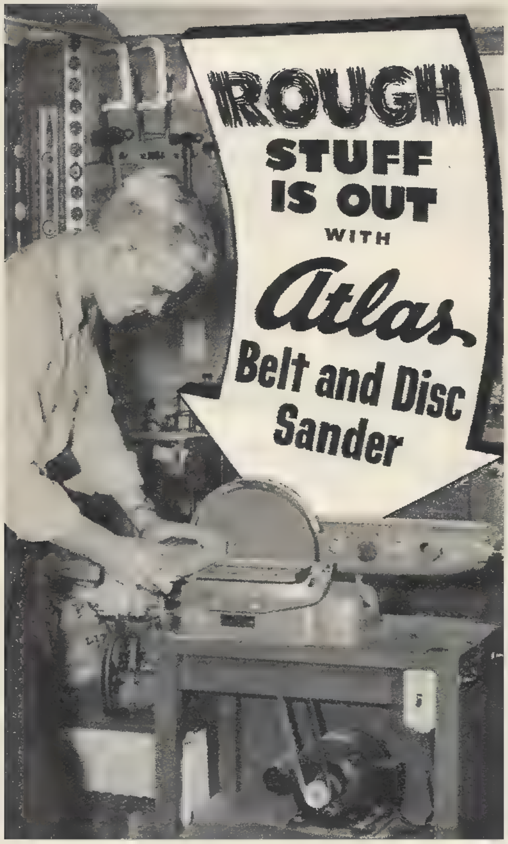

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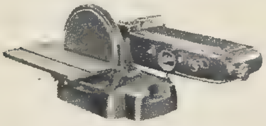

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Sleepwalking Facts

[*Continued from page* 132]

fathers were feared but idolized. Their mothers may have been domineering but were held inferior to the fathers and were called "nervous." Eleven of the men were the youngest of large families and showed a terrific need for the personal attention and affection they had lacked because of the size of their families.

A significant discovery was that these Army sleepwalkers showed little or no interest in women. Nine were single, five divorced, but all apparently had difficulty in working out normal sexual adjustments. One case may indicate the nature of this sexual problem. When this man's sleepwalking suddenly ceased, he developed marked homosexual traits.

One soldier frequently beat his wife while he was sleepwalking. After one of these attacks, he revealed that he had been dreaming about trying to plow a field with a balky mule.

"That mule made me so darn mad I socked it," he said.

When he awoke, he found that he had hit his wife in the face and broken her eardrum.

Many of the men recalled other nightmares they were living out during their sleepwalking. One man made a habit of picking up his wife in his arms and running out of the house, because he feared something was about to fall on her.

One soldier kept dreaming of a snake 25 feet long and 4 feet thick. He tossed and fought in a frenzy to prevent this monster snake from squeezing him to death.

From his studies of this group, Colonel Sandler concluded:

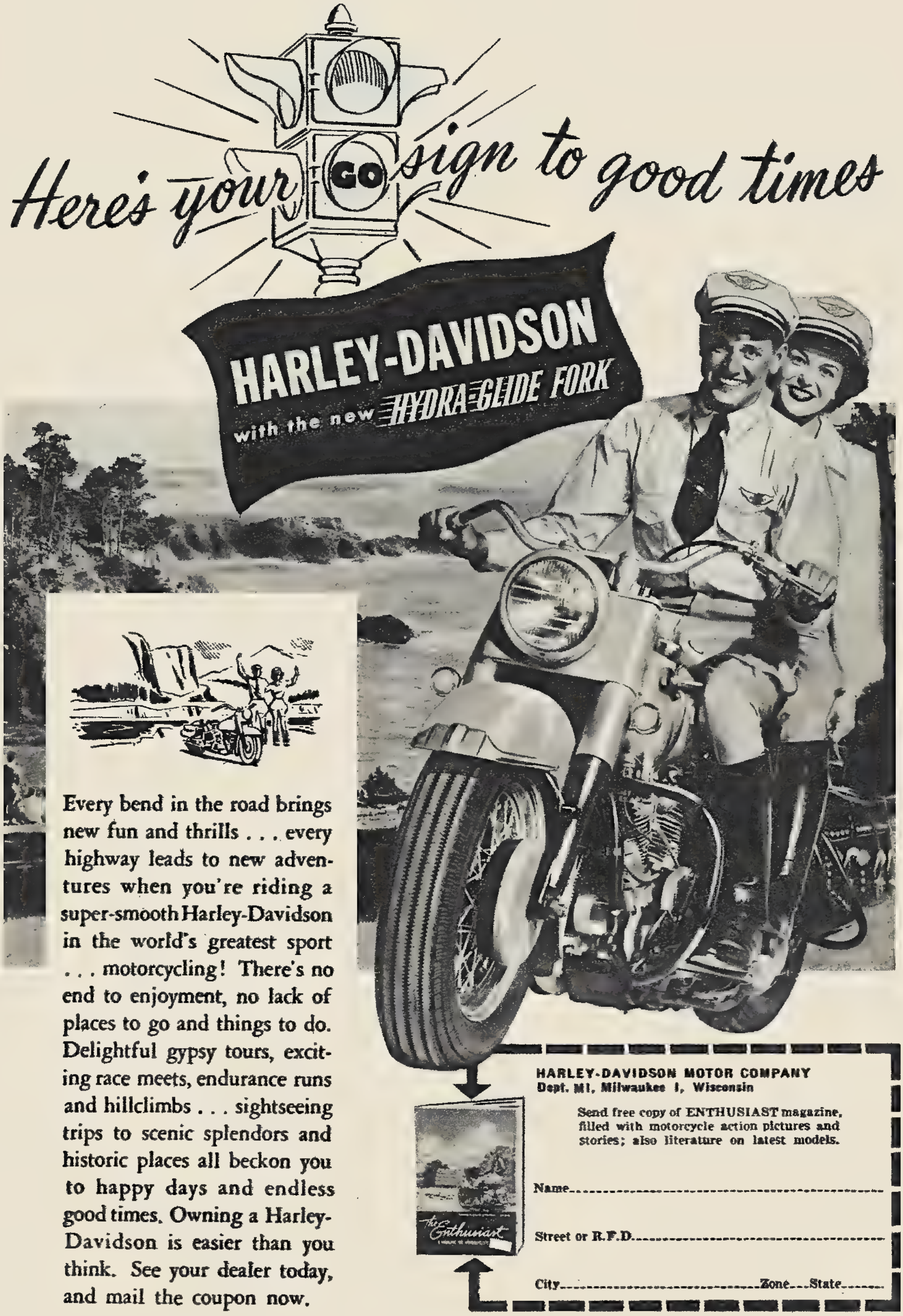
"The personality structure of the somnambulist is that of the overprotected, babied adult. . . . Somnambulism, in its essence, represents to the sleepwalker an attempt to escape from threatening dangers."

The group responded favorably to psychiatric treatment, which is the only approach that medicine has so far devised for tackling the problem.

Sleepwalking may be outgrown or suddenly stop when the secret personality problem or anxiety fades away. When it does not, doctors look for emotional conflicts in the background, or in the immediate situation of the sufferer, and try to eliminate them. Unusual stress is often the obvious cause.

This was true of many of the 117 male patients studied in 1947 at the Mill Hill Emergency Hospital in London. They were men who had been under intense enemy fire at Dunkerque and in Normandy, Belgium and Holland. They jumped from their beds, seized

[*Continued on page* 136]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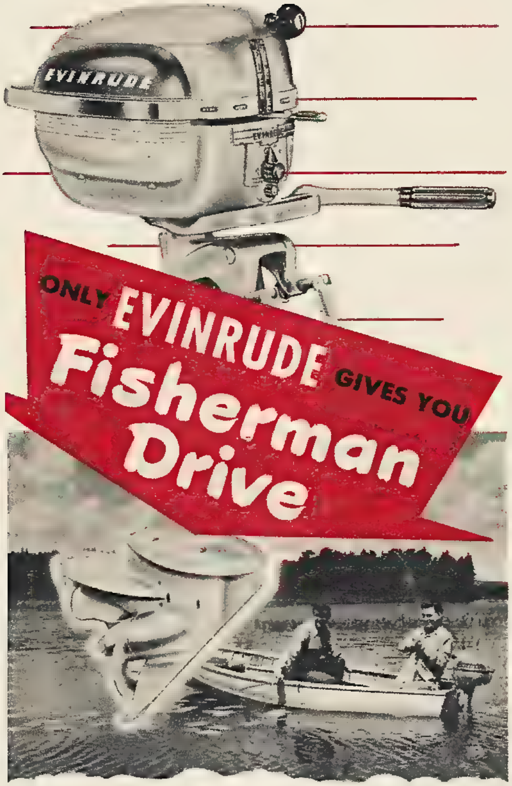

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Sleepwalking Facts

[*Continued from page* 134]

imaginary weapons and rushed to meet their phantom enemies. Gradually, as the threat of combat was removed from their minds, the attacks ceased.

The Mill Hill doctors agree with other authorities that behind most sleepwalking cases is some acute, temporary stress, or a deep-seated psychological problem. Still unanswered is the question of why some people react in this fashion while others, under equal pressure, do not.

Sleepwalking is particularly puzzling to psychologists because it goes contrary to accepted theories about sleep and dreams. Dreams are supposed to have the function of prolonging sleep quietly, by taking problems which might disturb sleep and "solving" them in symbolic terms. The sleepwalker usually gets up from bed an hour or two after retiring, when sleep is most profound. Why doesn't he, like the rest of us, lie quietly and work out the worries of his subconscious in dreams of action, instead of acting out his dreams?

Some psychologists call sleepwalking an extreme form of absent-mindedness. According to them, there's a strong subconscious urge to follow only one line of action and ignore any diverting details. This might explain the conduct of a charming Pennsylvania maiden who took a sleepwalk at midnight through her home town—but forgot to put on any clothes.

The sleep scientists frankly admit that they don't know, but they believe that sleepwalking may be hereditary. The most startling bit of evidence to this effect is contributed by Dr. A. Clerici, an Italian. He tells of a family of six who were all given to walking by night. One night they all got up from their separate beds at three o'clock and gathered in the servants' hall around the tea table. How they behaved or what they talked about, nobody knows, for everyone in the weird gathering was fast asleep. Then one of the children tripped over a chair, and they all woke up and went back to bed.

Sleepwalking is as ancient an activity as dreaming. Shakespeare portrayed Lady Macbeth, the most famous somnambulist in literature, so accurately that some scientists think he must have been a sleepwalker himself. At any rate, her fictional doctor's remark, "This disease is beyond my practice," is a statement our modern medical profession might still make today.

As yet, we have penetrated only the outer edges of this sleepwalking mystery—the strangest quirk of that everyday but unknown state called sleep. •

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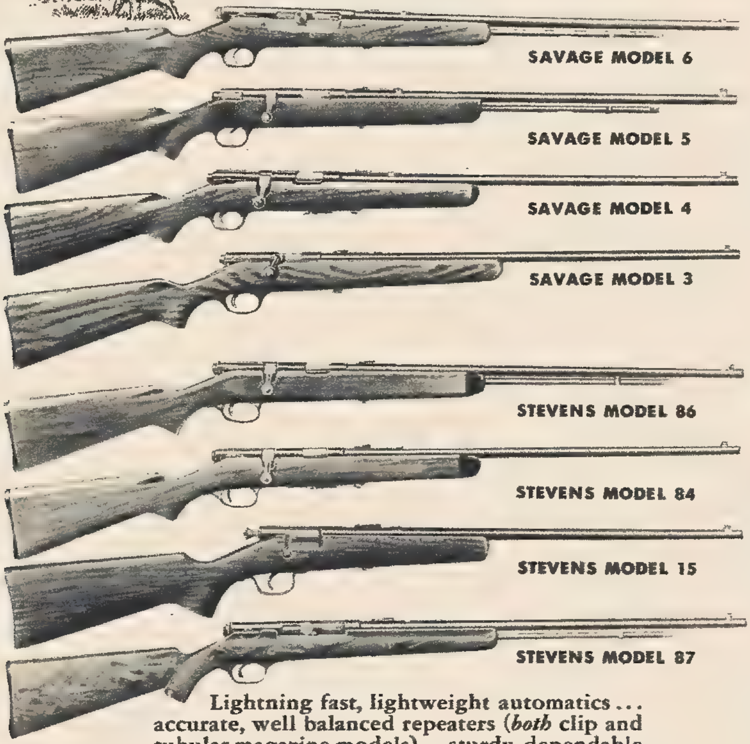

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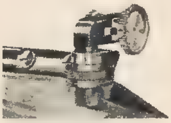

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Stevens Models 86S - 84S - 87S; same as above with No. 150 Micro Peep Sight with Hooded Front Sight illustrated above.

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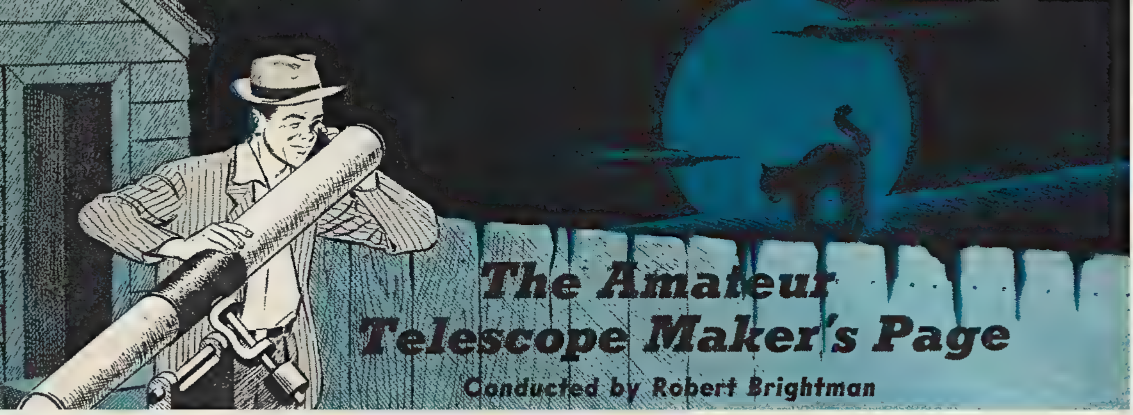


The Amateur Telescope Maker's Page

Conducted by Robert Brightman

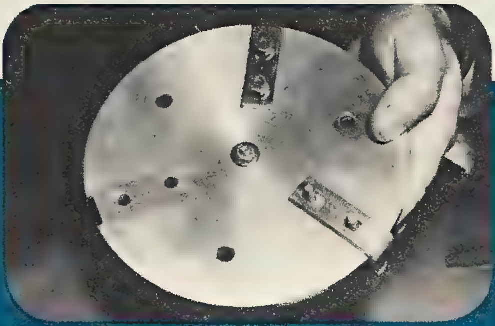
THE problem of holding the mirror rigidly in the telescope tube and at the same time of aligning it properly with the prism is greatly simplified if the cell or the mirror can be adjusted not only longitudely but laterally as well.

Most workers provide for up and down adjustment of the mirror by using slots in the bottom of the tube, such slots should allow 1 in. of movement. Adjustment of the mirror from side to side in the tube usually does not require so much play. If you have a 7 in. tube, housing a 6 in. mirror, ¼ in. of movement is all that is usually necessary.

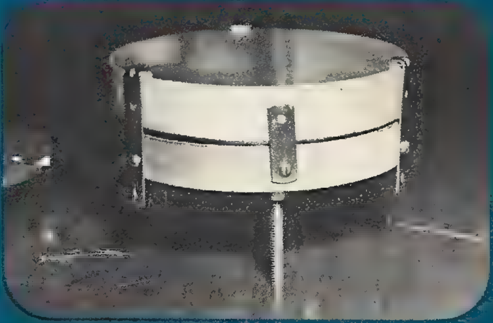
The best way to obtain this is to elongate the holes in the mounting brackets which are fastened to the bottom of the cell. This can be done by drilling two ¼ in. holes about ¼ in. apart and then filing away the metal remaining between the holes. Use a rattail file.

The final critical adjustment is obtained

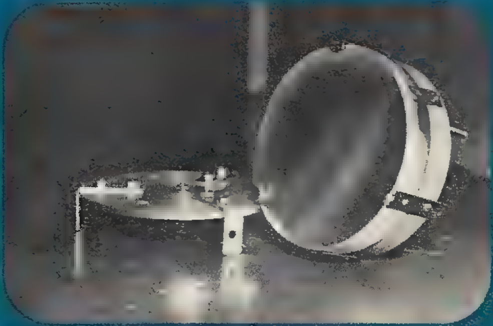
One of the first readers to complete MI's Telescope is George Juba of Newark, N. J. He dispensed with a finder. Sighting along the tube sometimes works just as well. Tripod seems light.



Bolt holes in brackets are elongated to permit lateral adjustment of cell in tube. Note how edges of cell have been cut away to fit brackets.



How mirror is secured to cell. Three padded clips clamp the mirror to cell. In between these clips are three smaller ones to take care of side play.



Right angle brackets on which the cell, left, is resting, engage the bottom of the tube. Auto valve springs and thumb nuts provide required tension.

by the use of three thumb nuts which bear against three shortened automobile valve springs. The springs are slipped over the three long ¼ in. bolts which are countersunk and locked into the wooden part of the cell. One of these bolts is plainly shown in the center photograph which appears on page 138.

Taking pictures through a telescope is a relatively simple matter. You don't need an eyepiece and, furthermore, you don't even need a lens on the camera. However, it will be necessary to make certain that the mirror in the telescope tube is pushed up far enough so that the focus of the distant image does not interfere mechanically with the camera body when the camera is placed opposite the eyepiece adapter.

In a future issue of MI we are planning to show you exactly the set-up required in order to take such pictures.

A number of readers have already sent in pictures showing how they went about constructing MI's Portable Six-Inch Telescope. If you have already not done so send in your photo. Please include a short description of your instrument. •

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Classified see page 56

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NAME ....

ADDRESS ....

Hand Knurling Tool

[*Continued from page* 117]

also finished to dimensions given. Three medium knurl wheels of ⅝ in. diameter are required, two right hand and one left hand unit. All are $\frac{5}{16}$ in. wide and have a $\frac{7}{32}$ in. hole. We have found the Center Tool Co. of 153 Center Street, New York, N. Y., to be one of the best suppliers for machine shop items of this type. If knurl wheels of other sizes are used then vary the handle dimensions accordingly.

Next, drill and ream a $\frac{7}{32}$ in. diameter hole to the 1⅜ in. and ¼ in. dimensions in the handle labeled Fig. 1. This is the hole used to pin the knurl wheel in place. The No. 11 drill clearance hole and the 10-32 tapped hole are now made.

Into the other handle, Fig. 2, drill and ream two $\frac{7}{32}$ in. diameter holes which are used to pin the two knurl wheels in place. Now, file a V groove into the handle, as shown, and proceed to assemble the tool.

Using $\frac{7}{32}$ in. diameter x ⅝ in. dowel pins, pin the three knurl wheels in place in the handles. If the knurls do not roll free enough on the dowel pins then lap the holes in knurls. The tie bar is now inserted into the handle slot flush with the end and back. Pin these two details together by drilling and reaming two $\frac{3}{16}$ in. diameter holes through them and dowel in place. Finally, insert the thumb screw through the clearance hole in the handle. Then insert it through one of the six holes in the tie bar and screw it into the tapped hole in other half of handle. •

Midget Radio Set

[*Continued from page* 102]

Plexiglas measuring 2½x6 in. was used for the base because it looks pretty and permits the wiring to show clearly in the photographs. A small piece of wood will serve as well.

The wiring is simplicity itself. The short winding of the antenna coil, called the "primary," goes to the binding posts marked "Aerial" and "Ground." The longer winding. called the "secondary," goes to the tuning condenser, then to the crystal, the fixed condenser, and the earphone binding posts. The "ground" connection is a wire to any nearby water or steam pipe.

In areas where the electric power wires run on poles, it is possible to obtain excellent reception using these lines as the aerial. Connect a mica fixed condenser in each leg of an ordinary plug-in cord. These condensers prevent the low-frequency current from going through, but they pass the high-frequency radio signals picked up by the outside wires. •

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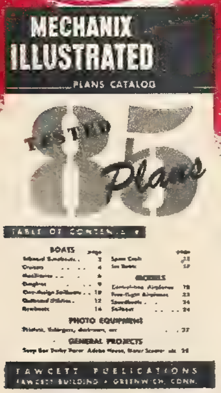

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Auto-Magic Door

[*Continued from page* 121]

moment the door starts to move. Connect the key-activated Cutler-Hammer waterproof driveway switch in parallel with another switch located in the garage or house so you can close or open the door from inside. Run all switch wiring in a conduit or else use wire of the lead-sheathed two-conductor type. A length of ⅛-in. cord or $\frac{1}{16}$-in. cable is run from the iron strap on one of the pivot arms to the control panel, as shown, to act as a trip.

If your garage does not have sufficient headroom to accommodate the control board shown, an alternate arrangement utilizing a three-pole, double-throw switch is given.

Install the door-actuating cables as shown in Fig. 2. Note that a turnbuckle goes in one of the cables so the pull on the door can be equalized, preventing it from binding. Should you plan to leave the door open, you should provide some means of locking it at its full-open position.

A complete kit of parts for the winch can be ordered by mail from The Hobby House, Box 3421, Jacksonville 6, Fla., for $17.50. All that you need to assemble the kit are a screwdriver and a pair of pliers; so the time and effort saved are considerable. •

Glass Brick

[*Continued from page* 123]

Prepare a batch of mortar, using three parts of cement to one of coarse sand. Mix them thoroughly; then slowly add just enough water to make a rather dry paste.

Place a 1-in. layer of mortar over the door sill and install the first course, coating one side of each brick with mortar as you put it in place. It is important that the first row be leveled; so lay a straightedge across its top and gently tap the bricks into place.

After the first row has been leveled off, smear a layer of mortar over the top just thick enough to cover the lines drawn on the door jambs; then proceed with the second course. After the second and each successive course, drive two 4-in. finishing nails into each door jamb flush with the top edge of the row. These nails serve to anchor the tiers of brick to the frame. Check each row to make sure that it is plumb and level.

When the job is completed, allow to set for two hours; then remove excess mortar by running a joining tool along each joint. Carefully wipe all mortar off the brick faces with a damp cloth. Let set for another 48 hours before applying finishing mortar. •

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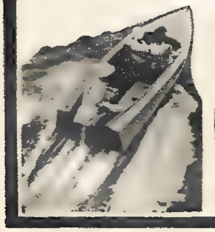

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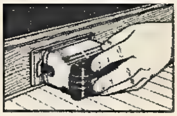

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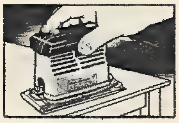

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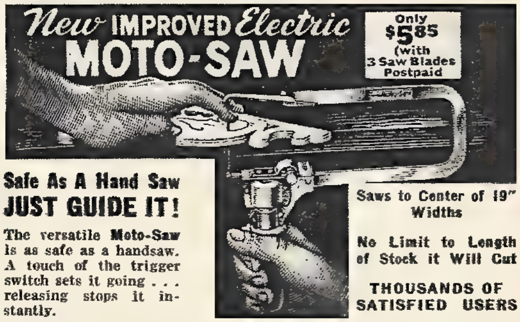

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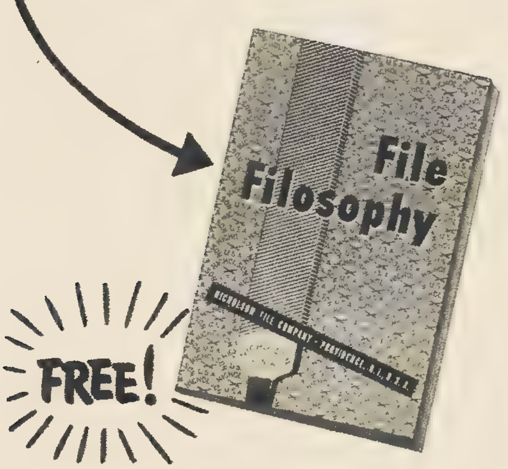
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Sliding Rack Tilt-Top

[*Continued from page* 131]

rigidly in the clamp and only the camera back moves for focusing. With the camera held in this position, the pan shots are taken by loosening the tripod screw to permit the entire tilt-top to be swung around for each separate exposure.

Even stereoscopic pictures are possible with this tilt-top! Just attach your camera to it at right angles, slide the top section out to one end and make the first exposure. Then wind the film and shutter, slide the camera over until its lens now occupies a position about 4 to 6 in. to the side of its previous position, and make the second exposure. The resulting pictures can be mounted side by side and viewed through a stereo viewer to observe the phenomenal illusion of depth characteristic with this type of photography.

Construction. If you find it difficult to cut the grooves in the tracks, you can get around it by nailing three strips of wood together.

The base for the unit is an ordinary tilt-top, to which are added the grooved tracks and sliding racks. The tilt-top is made by hinging two 5½x8½ in. rectangles of ⅜ in. wood together at one end. In the center of the bottom piece, drill a hole large enough to accommodate a ¼ in. nut. This nut should be soldered securely to a large washer. It fits the tripod screw and serves as the tripod socket of the tilt-top.

The main sliding section should fit freely in the grooved track. It should consist of two grooved tracks screwed to a frame of ⅜ in. thick wood, measuring 4½x8½ in. The grooved tracks can be made of 8½ in. long strips of ¾ in. square wood, and a $\frac{3}{16}$ in. wide groove cut ¼ in. deep into one side of each.

The third and last sliding section is made to support the camera, and slides into the grooved track of the main sliding rack. This section is made of a solid block of ¾ in. thick wood, 7 in. long by 2½ in. wide, to the bottom of which a 7x3 in. rectangle of $\frac{3}{16}$ in. thick wood is attached with screws, allowing it to project ¼ in. along each side. This projection should fit into the grooved track of the main section.

Next, open your camera, set it on this small section, and drill a ¼ in. hole through the rack to correspond with the tripod socket of the camera. The camera can then be attached to the section with a ¼ in. bolt passed through this hole.

To use it, attach the camera to the small upper sliding rack by means of the ¼ in. bolt and then clamp the lens mount into the lens mount clamp. Now, you'll practically have a view camera! •

Apples Big as Your Head

[*Continued from page* 81]

growing time in half is obvious! Colchicine interferes with cell division in animals just as it does in plants. That's why you must handle it with extreme caution. Dr. John H. Van Dyke and Dr. M. G. Ritchey of Washington University School of Medicine injected the drug into the bodies of young white rats before birth. Queer monstrosities with large growth of some parts of the body resulted.

However, the ability of the drug to check cell division may have future medical applications. Cancer, for instance, is a disease of wild and uncontrolled cell growth. Intensive studies of colchicine are being pursued at the Hickrill Laboratory for basic chemical research in Katonah, N. Y.

No expedient way has been found to introduce colchicine into the fertilized eggs of mammals where it can act upon heredity factors. It's unlikely that the drug can ever be used to make a mouse as big as a rat.

But the situation is different with egg-laying species such as poultry and fish. In fact, injections of colchicine into fertilized chicken eggs have resulted in combs and wattles twice the normal size and greatly enlarged tail feathers in roosters. Dr. Blakeslee has also been applying colchicine treatments to trout eggs. A trout the size of a halibut would equal the dimensions of "the one that got away."

While colchicine poisons the plant and juggles heredity, plant hormones stimulate growth and encourage blossoms to develop into fruit more rapidly than if left to their own devices. Hormone treatments, now used mostly on flowers and fruits, may prove to be just as applicable to the major field crops which feed the world.

Another method of increasing the size of your crops is still a long way from general use—radioactive bombardment of genes. But persistence—the kind that thinks nothing of smelling seven million marigolds—will probably turn up interesting, perhaps spectacular results eventually.

Maybe you'd call a vegetable with a carrot for a mother and a beet for a father a grocer's nightmare. But in Holland, they're actually raising these hybrids. They call them "wobblies." New taste sensations, not to mention nourishment, may very well be provided by such extraordinary foods as whoats, cabbiflower, potarrots and pumpmelon!

It's only the beginning, but it's clear that science is getting closer and closer to the secrets of controlled evolution. And there's little doubt that when a real measure of control is developed, such things as apples as big as your head will be common-place sights. •

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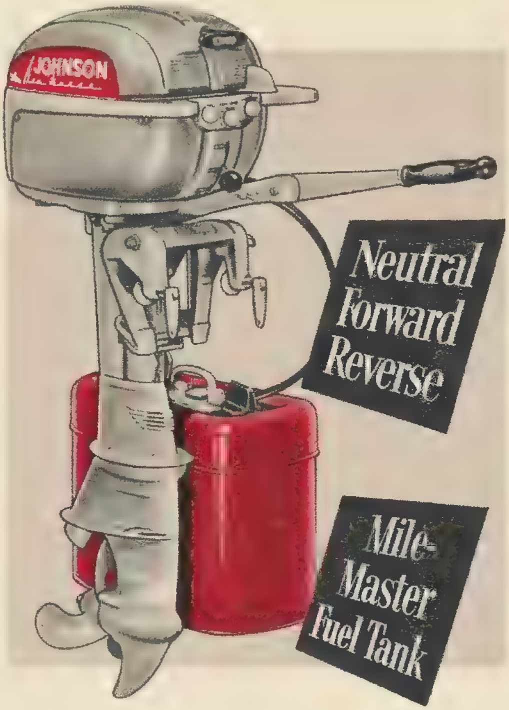

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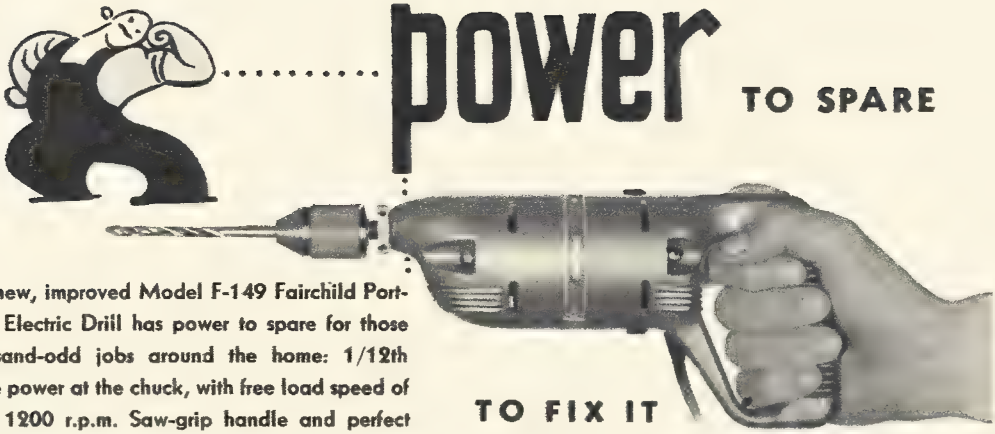

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Air War Over the Arctic

[*Continued from page* 65]

by means of ordinary maps. Near the magnetic poles, compasses perform like roulette wheels. Northern lights and sunspots black out radios and electronic equipment.

Sounds have terrific carrying power in the cold, clear air. During World War II the Japs on Kiska didn't need air-warning devices. They could hear our bombers taking off from Amchatka, 75 miles away.

For many months jet fighters have been going through rigid tests in the Arctic under simulated combat conditions. The Air Force's "Hat-in-the-Ring" Squadron, equipped with Lockheed P-80B "Shooting Stars," arrived at Ladd Field, Fairbanks, Alaska, in December, 1947, for the first mass tactical operation of jet aircraft over the polar area. This was a unit of the First Fighter Group, based at March Field, Calif.

Before taking off, the planes were winterized. To withstand temperatures down to minus 65 degrees F., they were modified so that their GE-Allison J-33 turbo-jet engines could be started with gasoline, because that fuel is more readily combustible. Later they switched to kerosene, the regular jet fuel. Recently the Navy Bureau of Aeronautics and the AiResearch Manufacturing Co. of Los Angeles have developed the first successful starter for jet and turbo-prop engines. This new self-starting system may solve one of the problems of jet operations in the Arctic.

Exact training procedure for the jets is, naturally, secret. In general, though, when not supporting the ground forces in simulated combat the jets "go upstairs" to fly top fighter cover for bombing missions and aerial supply flights. Officials have expressed complete satisfaction with the jet fighter as experimental, first-line equipment in the Arctic. Using the faster jets, pilots can complete their missions in about half the time required in conventional aircraft.

Special weather-equipped B-29s make regular flights over the Arctic. The 375th Reconnaissance Squadron has been handling two vital missions for more than a year: first, to observe weather conditions over the North Pacific from the Aleutians to Japan, and second, to maintain weather recon reporting facilities in the polar area. Because of the scarcity of ground weather stations, there is a negligible amount of forecasting data available north of 70 degrees latitude.

Polar prowls are made thrice weekly by the 375th Recon Squadron, flying out of Ladd Field. In these flights, B-29s take off with capacity loads of 134,000 pounds on 17-hour missions. At takeoff they carry 8500 gallons of fuel, 14 crewmen.

For most of the trip these planes fly level at 10,000 feet which is high enough to evade most bad polar weather. However, they must go up to 20,000 feet till they are north of the Alaskan mountain ranges.

Summer missions are flown in continuous daylight and winter missions in continuous darkness. To aid comparison of all types of information, the planes usually follow the same route:

From takeoff point the 375th heads for Aklavik on the Arctic Sea Coast of Yukon Territory, then to Cape Manning on the southern tip of Prince Patrick Island, from there northward up the 123rd meridian to the Pole. The return trip is via Point Barrow, Alaska.

Radar is vitally needed for Arctic flying. The operator can track and determine active cold fronts 50 miles away and identify various types of ice formations.

There are few manmade landmarks such as cities, roads, railways and towns. Natural landmarks like lakes, rivers and coastlines are often so badly obscured by snow that it is next to impossible to distinguish them from land.

By a new grid system, radar operators have learned to estimate wind, drift and ground speed to a fine margin, even through an overcast. The margin of error in figuring the drift has been narrowed to one degree. Ground speed can be computed to within five knots.

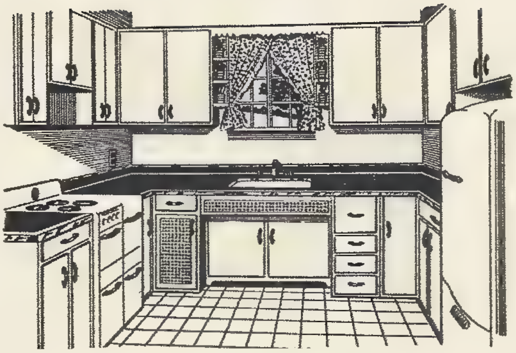
Actually polar weather isn't as treacherous as legend would have it. The air is mostly stable and the greatest hindrances are fog, snow and ice haze. In winter there are few clouds and it is fairly clear although of course darkness prevails all the time.

Right at the North Pole it often is warmer than at Ladd Field. Strong winds are prevalent, one mission hitting a cyclone over the polar cap.

Pertinent weather information is relayed by a Naval weather-teletype machine to all points of the U. S., Canada, Alaska and even Hawaii. Such information is extremely important since Arctic weather today foretells the world's weather tomorrow.

The Air-Weather Service operates a network of sub-Arctic weather stations that have shown the feasibility of sustained operation in the area. It also operates daily round-trip weather flights from Fairbanks, Alaska, to the North Pole and is experimenting with auto-

[*Continued on page* 148]



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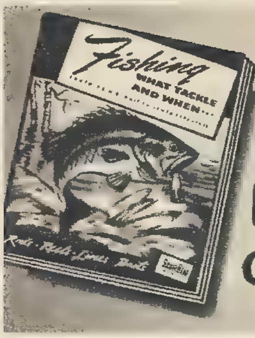

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Air War Over the Arctic

[*Continued from page* 147]

matic weather stations in remote Arctic regions where it is impractical to assign personnel.

Following a new rotation system for training in Arctic air war, the 43rd Bomb Wing, a Strategic Air Command unit is rotating three five-plane units of B-50s to Alaska for 45-day special field exercises, ending March 15. The four-engine Boeing B-50 is an improved postwar version of the B-29, with a top speed of 400 miles an hour, a cruising speed of 300, and service ceiling of 30,000 feet.

Wing headquarters for these first B-50s in Alaska is at Davis-Monthan Air Force base, Tucson, Arizona. Under the plan the bombers are flown from Tucson to Eielson Base near Fairbanks.

It is almost impossible to exaggerate the danger of the effect of intense cold on metals, plastic and rubber. Equipment must be thoroughly winterized. Plastic brackets on aircraft crystallize at low temperatures and must be replaced with metal. Hydraulic propellers are hard to "feather" and give way to those that are electrically controlled. All exterior plumbing has to be specially wrapped. Sometimes truck engines have frozen right while they are running.

When a plane lands, the fuel must be drained or it will freeze in the fuel lines. Engines, tail surfaces, wings, turrets and carburetors air scoops must be covered. Covers have to be pulled skin tight to prevent moisture from forming underneath, then freezing.

Batteries are removed and stored in a warm place. Mats are placed under all rubber tires so that they won't freeze to the runway, go flat or have the bottoms torn off.

All parked aircraft must be tied down because of the Alaska Williwaws. These storms, often including 100-mile-an-hour winds are caused by wind piling up against a mountain and then "boiling over" on the leeward side. They strike suddenly and toss unsecured airplanes around like chips. Luckily, it's easy to anchor a plane against one of these violent storms. A crewman tosses the loose end of a rope on the runway and pours a bucket of water over it. In a moment the rope's end freezes solidly and securely to the runway.

Other changes to adapt our planes to subzero operations include the use of new greases, cold-weather packing around hydraulic units and the installation of an electric blower to defrost the pilot's windshield and canopy. Synthetic rubber, brittle under severe cold, was replaced with natural rubber, including the sealing of the pressurized cockpit.

When a plane is prepared for polar flight, the covers must be removed. Snow, frost and ice (which may form instantly) must be cleared from all surfaces. All parts of the plane must be checked carefully because metal sweats and ice forms wherever there is moisture. The same cold that will freeze a man's bare hand in two minutes will cause the small amount of moisture discharged from the exhaust of a single plane to create an ice fog that may settle over an entire airfield and paralyze operations. The engines must be preheated by ground-heating units before they can be started and aircraft weapons thawed before they will operate.

Many of these winterization problems in the Arctic are being solved despite temperatures as low as 65 degrees below zero. Among the test planes being used are Fairchild Packets loaded with special equipment. The huge twin-box car is provided with snow and ice tires for the main landing-gear wheels. These tires have small slivers of steel impregnated in the tread to provide better traction and protect the rubber from ferocious slashing by the elements.

In one recent and very successful test with the Packets, additional heat for the cargo compartment, cabin and also for the outside wings, fuselage and tail surfaces was provided by four specially designed hot-air exchangers, instead of the two inboard exchangers formerly used. These furnish enough heat per hour to warm over 200 big rooms in a good-sized hotel. In this new system air, introduced by scoops, is heated to 350 degrees and forced under pressure to the leading edge of the wings and tail surfaces. The temperature on the outside surfaces of these equipment items, rises to about 130 degrees, preventing the formation of ice.

Training exercises for Arctic maneuvers have been conducted in various parts of Alaska and the United States by the Army and Air Forces since 1946. In 1948 two of these were held, "Yukon," at Big Delta, Alaska, and "Snowdrop" at Pine Camp, N. Y. They proved the efficiency of transporting men, equipment, material and supplies by air to a combat, cold-climate area, fully prepared to engage an enemy. They also revealed improved methods for parachuting equipment and for landings and takeoffs by gliders on ice and snow.

The Air Force's new crash rescue system deserves special mention. Since 1947 the A. F. has maintained parachutist teams of medical technicians and guides to be used by the 10th Rescue Squadron in Alaska. The teams each include two medical technicians, two Alaskan guides and a jump surgeon and

[*Continued on page* 150]

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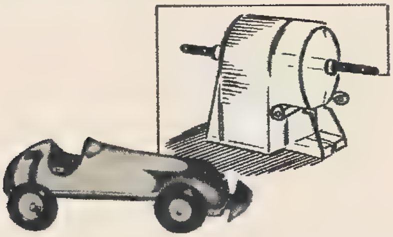

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Air War Over the Arctic

[*Continued from page* 149]

do remarkable rescue jobs when aircraft are forced down in inaccessible areas.

For more than a year the squadron also has been using long-range Douglas C-54 Skymasters for glider hauls and pickups. With the new method, rescue squadron can fly gliders loaded with medical aidmen and Arctic survival equipment to the scene of a crash without trying to land the four-engine transport the airmen "snatch" injured and survivors back to safety.

The squadron now includes four separate flights, each having two twin engine Catalina amphibious aircraft (for air-sea rescue), two four-engine bomber-type aircraft, two helicopters, two liaison-type aircraft and one twin-engine transport.

The four-engine jobs B-17s carry large lifeboats. The boats are dropped to crews forced down in the water. The long-range bombers also are used to locate crashed aircraft.

Often the parachutist rescue teams accompany the bombers in locating downed aircraft. These teams jump immediately on their missions of mercy rather than await arrival of the transports.

Helicopters have conclusively proved their usefulness in the Arctic. Back in September, 1947 an A. F. Sikorsky R-5 helicopter 10th Rescue Squadron at Ladd Field, made its first rescue mission above the Arctic circle, flying to Bettles, Alaska, 185 miles northwest of Fairbanks, to rescue George Plucinski, a trapper, stranded for two weeks on an inaccessible river bank.

Since this dramatic rescue the air force has been testing for frigid climates the new R-5F helicopter, which holds three passengers and the pilot—two more than earlier models. A tricycle-type landing gear and "high-lift" rotor blades provide better performance.

The R-5F can carry a covered litter or rescue hoist on each side of the cabin. Cruising speed is 85 miles per hour, range is 245 miles and climb rate is 1200 feet a minute.

Realizing that morale and efficiency are all-important in combating the rigors of Arctic flying, the Air Force set up an Arctic Indoctrination School at Nome, Alaska in September, 1947, to teach air crews how they can best survive the subzero cold.

Fliers are warned not to bail out of their planes in emergencies unless there is immediate danger of explosion. Chances of survival in the bleak polar wastes are much better if the crew rides the crippled plane down to a crash landing, then sticks near it both for shelter and for easier spotting in the snow and ice by search parties.

The men learn how to live off the land and build snow houses for survival in the face of 60-below-zero weather. They must get used to wearing clothing loose enough for air to circulate. Tight garments cause perspiration, which quickly freezes in the cold and thus forms a frost lining next to the skin. The men also find out that they may suffer a frostbitten face unless they shave regularly, as the moisture in the breath will freeze on a beard and turn it into an ice mask. On the other hand, the face must be protected with a special shield, or heavily greased, to prevent sunburn. Goggles, too, must be worn all day outdoors as a precaution against snow blindness from the intense glare.

After a course in the new school, the men still respect the Arctic and its very real dangers, but they show more courage and confidence in facing the rugged polar life.

The late General "Billy" Mitchell, noted air pioneer, said:

"Whoever holds Alaska will control the airlines of the world."

So far, our only challenge for control of those airlines has come from a nonhuman enemy, the polar cold. Should this cold air war over the Arctic suddenly grow hot, at least we'll have the pilots and planes right there on top of the world—ready to spring to America's defense and strike back a powerful counter-blow. •

Which 'Comp'?

[*Continued from page* 84]

because the degree of choke can be varied instantly. A Poly-Choke is available without a compensator. It offers the same desirable choking features of the other, but doesn't lessen recoil.

The Cutts Compensator is the favorite of most skeet shooters and costs about the same as the Poly, with assorted tubes. The Cutts also provides excellent, uniform patterns at varied ranges, but to vary the pattern (and the degree of choke) it is necessary to insert a different tube. Tube inserts are available, ranging from the open "Spreader" tube to full choke. The Cutts offers a greater recoil reduction than the Poly, averaging about 20 per cent.

The Power-Pac is a comparative newcomer in the field. Like the Cutts, the degree of choke is obtained by tube inserts, threaded for attachment at the front of the compensator. The choke inserts on this device are unlike others in that they extend back into the compensator tube rather than protrude from it.

The Weaver Choke, also developed in recent years, is the least expensive of all and is

[*Continued on page* 152]

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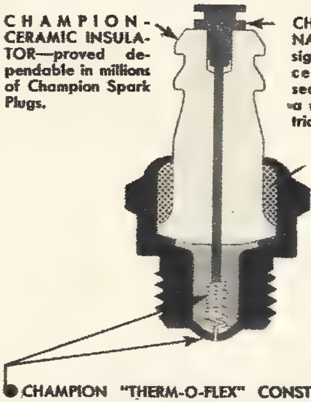

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THREAD	⅜"-24	¼"-32	¼"-32
THREAD LENGTH	7/32"	7/32"	5/32"
"V" GLOW PLUGS WEIGHT, GRAMS	VG-1 8.7	VG-2 3.7	VG-3 2.8
"V" SPARK PLUGS WEIGHT, GRAMS	V 8	V-2 3½	V-3 2½

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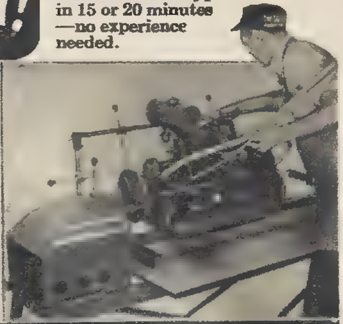

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Which 'Comp'?

[*Continued from page* 151]

somewhat similar to the Cutts in principle. It offers less recoil reduction than any of the three previously mentioned devices, and in uniformity of shot pattern is about the same as the Power-Pac. Recoil reduction, obtained by means of gas escape holes rather than the slots employed by the Poly, Cutts and Power-Pac, averages about 10 per cent. The interchangeable choke tubes are offered in several degrees, from cylinder to full choke, and like the Cutts and Power-Pac are threaded to screw into the end of the compensator tube.

The other newcomer is the Ennis Aider, which costs about $20 installed. This device is attached to a skeet-choked or cylinder-bored barrel, and has tubes for full and modified choke only. The amount of recoil reduction is less than that of the Weaver, averaging around 8 per cent, and the pattern density and uniformity is on a par with the Power-Pac and Weaver. The compensator has holes rather than slots for gas-escape, and the choke tubes are threaded to screw into the compensator.

Another newcomer to the choke-compensator field is the Shooting Master. In general design, it is rather similar to the Poly, and employs the same choking principle. I have not tried this device, and have seen no tests that offered accurate details on the pattern density and uniformity at various ranges or on the recoil reduction.

It should be understood that all my preferences were formed not from tests at a given range, but from tests made with varying loads at varied ranges. Average performance rather than individual performance formed my opinion. However, no statement on such matters can be absolute, for no two chokes, two loads or two guns will operate "exactly" alike, and many factors operate to vary the extent of the recoil with each shell fired.

From a purely personal viewpoint, I'm not too much interested in recoil reduction, for almost all of my shooting is done in the field, and very little at skeet or trap. In view of the restricted bag limits, it's seldom that I burn up a box of shells in a day, whereas the skeet and trap-shooter may fire 200 shells during the course of an afternoon. In firing at game, even with magnum loads, I've never felt excessive recoil, possibly because of the excitement of the hunt. To the skeet shooter, however, any reduction in recoil is desirable. There are many who develop the bad habit of flinching as a result of the effect of recoil. For them the compensator is invaluable.

But whatever the make, I'll choose a gun with a *tube* any time. •

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I Walked Through Fire

[*Continued from page* 75]

behind me gave my shoulders a gentle shove. Terii had started!

I gritted my teeth and groaned. Mechanically I stepped forward. My legs were numb and leaden. I felt like a moth lured helplessly toward a flame.

Then my bare feet touched something uneven and elevated. Suddenly countless tiny electric shocks needled the soles of my feet.

I felt that I made a sorry, trembling figure treading behind Terii. Oppressive heat waves shimmered before my fixed gaze, and forced me to half-close my eyes. A sudden blast of heat all but suffocated me. My lungs became filled with burning-hot air. A moment more of this choking heat and I would smother.

Then, all at once, the prickly sensation on the bottom of my feet ceased, and I knew that I had crossed the fire-pit. I glanced down at my feet. They were untouched! Every pore of my body was oozing sweat. I could see that Terii's broad back was streaming with perspiration, too.

Terii raised his branch of *ti* leaves, the signal that the last man had passed over the pit and that everyone must now swing right-about-face for the return transit. I knew that I could not stand another walk across the hot stones. I stepped quickly out of line. Terii smiled and gave me an understanding pat on the shoulders. Quickly I was surrounded by the tourists, who lifted my feet and wiped away the dirt to search for blisters. There were none. The natives shouted, *"Maitai roa!* Very good!"

Can the fire-walkers really invoke some mysterious power to make their bodies safe against flame? Emotionally I experienced intense anguish but physically I was untouched. Several white men who have tried fire-walking have been horribly burned. Other fire-walkers have suffered no discomfort at all. Perhaps the fascination of the fiery pit and the strange ritual exert some hypnotic effect so that for the moment the body becomes completely numbed to pain.

I'm not sorry I accepted Terii's challenge and braved the fire-pit. Now I know how it feels to walk through fire. It's an eerie, terrifying experience, this fire-walking—and I'll never do it again. But I'm still trying to figure out *why I didn't get burned!* •

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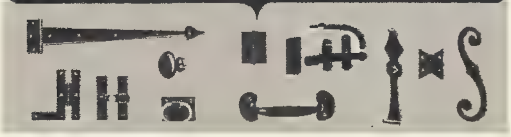

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Robots Are People!

[*Continued from page* 68]

lure of unknown danger to the mystery about these wonderful puppets that came to life. Some speculated on whether a dwarf was hidden inside. Others whispered that Jacquet-Droz had driven a bargain with the devil.

Meanwhile, Jacquet-Droz happily counted his gate and kept an eye peeled to make sure no crank tried to assassinate one of his marvels.

The girl musician was most startling. She actually played the harmonium and her recital lasted a full hour. As a player, she showed all the skill of Haydn, the noted Austrian composer. Her eyes moved and her lips and entire head quivered with emotion. Noblemen commented on her probable virtue while showman Jacquet-Droz, artfully pretending to adjust a fold in her dress, set in motion other parts of her clockwork-driven drum. Pins in this drum made her fingers and arms move deftly over the keyboard of the spinet and play the new tunes that Jacquet-Droz himself had written.

The writer neatly penned numerous letters and messages, then dashed off a flattering toast to King Louis XVI. The artist—apparently at will, sketched complex line drawings of Cupid in a chariot, whipping up his butterfly steed; the laurel-crowned head of Louis XIV; a hound, with its name "Mon Toutou" inscribed under the belly; and, of course, Louis XVI and his consort.

Now and then the artist raised his pencil, bent his head forward with a studied expression and blew gently across the drawing so that the pencil leavings would not smudge as his hand proceeded with the sketch.

This was the master touch, for the caress of the robot artist's breath against the cheeks of the ladies present made several of them swoon. When they revived, they claimed that this wonderful breath had been "perfumed like a meadow of Normandy poppies."

Newspapers of the day marveled at these "living" puppets. In every sense they were the rage of Paris. Even governesses of noble brats held up the three robot children as a shining example of good conduct for the younger generation.

The Swiss watchmaker's miracle children were not the first man-made people. Manlike monsters stalk through all folklore. Since earliest antiquity men have dreamed of strange beings created in their own image. Lots of human energy has gone into speculation on the chances of producing an artificial man that might really draw the mysterious breath of true life.

Back in 2634 B.C. the Chinese Emperor

Houang-ti ordered his craftsmen to make him a man who could always point south. They turned out a clever magnetized figure—probably the first robot in history. He was set up on the rear end of a battle cart to help the Emperor pursue his ancient enemy Tschiyeou in southern China.

Egyptians, Babylonians, Phoenicians, Cretans and Greeks also dabbled in robot making. They used hydraulic and pneumatic devices to move their hand-carved little men and thus astound worshippers in their temples.

In the Middle Ages, Albert Magnus reportedly spent 30 years in building a mechanical man that answered the door and saluted the visitor.

Camus made a fancy toy carriage for Louis XIV of France. The tiny coachman cracked a whip and the little horses' legs moved naturally. When the carriage arrived opposite the King's seat, a page hopped down and opened the door for milady, who then stepped out and presented a petition to the King.

René Descartes, the 17th-Century French philosopher, thought "bodies are all mechanisms" and created an automatic female to prove his theory. When he tried to ship his mechanical woman across the English Channel, a tempest arose. The young lady began "to jump about in an unseemly fashion" within her sealed box. The ship's captain had the box opened. When he saw the strange woman inside the box, he promptly tossed her overboard.

"Back to the devil, where you belong," he cried.

Modern robots usually get better treatment than did Descartes' restless lady. The term robot derives from the Czech word *robit*, meaning "work," and came into wide use in 1923 when Karl Capek wrote a play R. U. R. (Rossum's Universal Robots), in which mechanical beings did all the work for man.

In real life, scientists are yet to achieve this happy, workless state—but they have created many ingenious robots that are taking over some of our monotonous tasks—from answering the phone to piloting planes or working out complex mathematical problems.

Bell Laboratories' weird electronic brain called Vodor can put words together mechanically and "talk." In Washington the U. S. Coast and Geodetic Survey has a complicated machine known as The Great Brass Brain. When questioned, this robot can predict tides accurately for every port in the world—years in advance.

Not only can some of today's robots think out difficult mathematical problems and talk,

[*Continued on page* 156]

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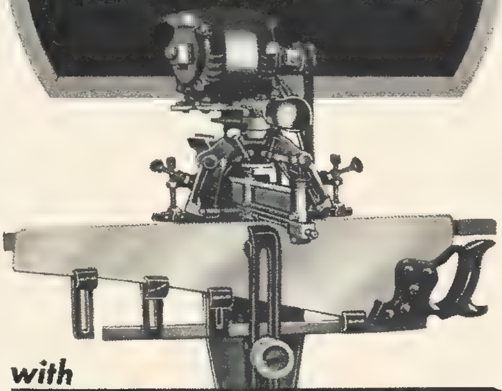

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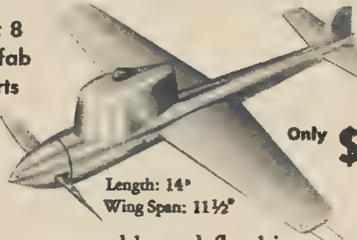

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Robots Are People!

[*Continued from page* 155]

but others have sensitive fingers and ears, can test chemicals by "sense of taste" or see through photo-electric eyes. But even the best of modern robots *look* more like clever gadgets than like people.

Despite all the new tricks, our latest mechanical men lack the personality that made critics of Jacquet-Droz insist that he had sold himself to the devil for the privilege of creating people more lasting and clever than God's. Nearly 200 years have passed since his mechanical boy dotted his first "i," the artist drew his first cupid and the girl tapped out her first minuet. Yet the trio remain as startling as the day their creator popped them out of their black boxes in Paris.

Today, in the historical museum at Neuchatel, the artist's eerie breath still draws a gasp from his audience. The young lady of the little robot family still minuets with a skilled human touch no modern, mechanical player can copy.

Only the writer has lost some of his human quality. Over and over again he must scribble out *"Welcome to Neuchatel"* for the gaping visitors. Some day, as he hears the same gasp, sees the same gesture of surprise, gets the same request for a souvenir of his writing from the staring line of spectators, he may slip a cog and jot down on his pad,

"PEOPLE are robots!"

Take it from Pierre the Penman. He's had almost 200 years of very personal experience with robots—he should know. •

Hollywood Star Chaser

[*Continued from page* 93]

"So what?" I told myself. I'd operate on a single phone. When enough calls started coming in, I reasoned, the phone company would be glad to give me that switchboard.

I was sure that actors and other free-lance movie workers would rush to use my service and let me take calls and track them down when they were buying groceries, shooting pool, playing golf or visiting relatives.

I set the fee as low as possible—$5 to $20, according to the earning power of the customers. After six months, though, I had only 50 people on my list.

In my eagerness, I had overlooked one vital factor. I'd gone into my strange business in 1932, at the height of the Great Depression. Most movie actors, like everyone else, were finding it tough to make ends meet. Many of these 50 customers I did have during the first

[*Continued on page* 158]

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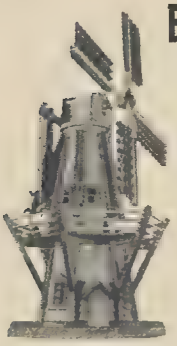

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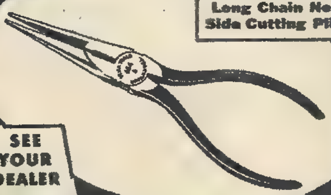

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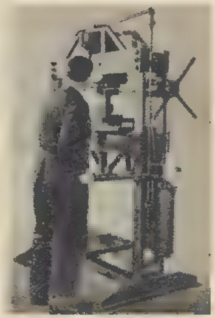

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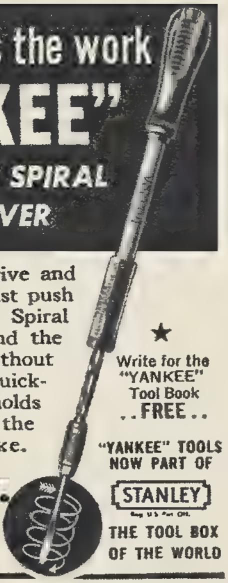

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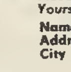

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Hollywood Star Chaser

[Continued from page 156]

six months of my new business couldn't pay promptly. That first year was really rugged.

I managed to scrape along only by going back to a trade I hated—fighting. Unfortunately it was the only job I could get that didn't directly compete with the actors I was rounding up for the studios.

At the end of a year, I had 200 customers—and finally got a switchboard. At first, many actors were reluctant to take the service for two good reasons. First, they were afraid that I would tip off some other performer, who was a friend, that a good job was open at the studio. And, secondly, they often didn't want anyone to know where they were every hour of the day and night.

Another problem was getting the studios to call our number first. Their natural impulse was to phone the actor at his home or to call his agent. But, in the end, they all found it more efficient to call me immediately.

Gradually, the performers of Hollywood learned they could trust me to keep any secrets they had.

I found out that everyone lives by a pattern. If a customer liked Turkish baths, I'd remember that and call him at every Turkish bath in town, if I couldn't find him anywhere else. I set up a filing system to keep a record of the calls made to, and received from, every client I had. When somebody wanted him, I'd look through these records of old calls and various numbers where we'd found him before.

Slowly, I built up my reputation in Hollywood as a "telephone detective" who could find actors and actresses no matter where they had gone, and locate them quickly, too!

Today, as soon as we get a new client, we find out all we can about him. We have him fill out a questionnaire, telling us his clubs, his favorite restaurants, who his barber, clothier, best friends and masseur are. We get a list of numbers to call when a studio wants our client. Believe me, we have found stars in the strangest places!

If ever a star needed the services of a phone detective, it was the late John Barrymore. I stepped in with my call service and won the star's confidence. During the last years of his life, Barrymore gave out only my Call Club's number, Hollywood 6211.

Always generous, John Barrymore paid me $1000 a month for my trouble. That was the fee that made the Call Club solvent. After that, we never had any money problems at all.

Today, I probably know more about the private lives of the Hollywood stars—all of whom have at one time or other been subscribers to my service—than any other living person. But when the gossip columnists prod me for tips on scandals and other hot stories, naturally, I'm not talking.

The whole success of my business rests on my ability to keep my mouth shut. The 10 operators who work my five switchboards on day and night shifts are carefully screened on their ability to keep the information they gather in their work strictly to themselves. I'd fire any one of them who broke our rule of secrecy. But I've never had to in the 17 years I've been in this business.

The Call Club now has three busy offices, with the main one on Hollywood Boulevard. Among the hundreds of stars and featured players who are members of the club are Marilynn Maxwell, Keenan Wynn, Ava Gardner, Lena Horne and Pete Lorre.

Every day there's something exciting or amusing in my business. One morning Paramount called up in a panic because they couldn't get in touch with Barry Fitzgerald, who was working in one of their pictures. Their whole production was being held up for Fitzgerald and they wanted him but bad!

We called Fitzgerald at home and everywhere else we thought he might be. No luck. Then it occurred to me that the old fellow might be sleeping so soundly that he hadn't heard the phone.

Because of the emergency, we phoned the Hollywood Police Department and asked them to go to Fitzgerald's home and wake him up. They got him up for us and rushed him to the studio.

I've called Honolulu, New York, and Boston just to find a film player. I often spend hundreds of dollars to track down an actor or actress. My phone bills run $1000 a week!

Of course, there's only one Hollywood—and, personally, I love the place for the fine life it's giving me. But, no matter where you live, there are always local stars—doctors, lawyers, business executives, the Mayor and other leading citizens. They need phone detectives in their business and professions as much as those fabulous people in filmland do. Line up a few of those for your own phone-paging setup, gain their confidence that you can keep your mouth shut about their personal affairs—and you'll be surprised how soon you'll make money chasing stars, too.

Today, my Call Club is a gold mine, with 3500 customers who dig up from $7.50 to $75 every month for my phone-chasing service. I now own a small stable of racing horses and plan to buy a local radio station soon.

But I still get my big kick out of getting a call through fast to the little fellows, the bit players who always need work to keep going. After all, it was the trouble of Joe, another bit player, back in 1932, that first started me chasing Hollywood stars, wasn't it? •

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Meet the French Renault

[*Continued from page* 91]

just under 65 when we reached the bottom and went into that curve. I think my color was slightly off pea green as I cut the wheels on the loose, snow-covered ice. But the little Renault held its course without even leaning. Before I knew it, we were jauntily in the straight again. I don't know a single American car that could have done this without making leeway, if not a complete loop.

In the acceleration department this car with its 19 hp was really sensational. Drop it down to seven or eight miles an hour in high, crack open the throttle and it will pick up immediately without any sign of the usual torque agony. No other car in this class, especially the British, can compare with the Renault in getaway and pickup. On some steep hills I started off in high at the bottom with just an average head of steam. As the grade stiffened, I put my foot to the floor. Without hesitation, the little car gained speed and continued to gain until I was over the top. This, mind you, was on an icy surface where I expected wheel slippage.

The payoff came, however, when I was through with the test. The Renault was parked on a hill next to my new '49 Ford which was carrying the photographic and other equipment used on the test. When I told Mr. Huber that I was through with the car, he waved goodby and shot up the hill on his way back to his base.

When our equipment was stored, we started out—or so we thought. The Ford's wheels just did a slow spin and would not grab. We were forced to back down to get enough speed to climb at all. This was the same hill, the same ice the little Renault just went up from a standstill—like a skyrocket. As far as traction is concerned, the Renault was miles ahead of the new Ford.

Oldtimers remember when the Renault was the pride of France and one of the largest cars in the world—longer than a Rolls-Royce. I owned one many years ago for a short time. It sounded like a fire engine when it took off and had a ski-slide hood similar to our old air-cooled Franklin. Renault has been building cars for 50 years and is no newcomer.

Too bad I don't look well wearing a Renault! Every time I tried to get behind the wheel my hat was knocked off. Finally, when I did squeeze my bulk between the doors and closed them I felt like a three-headed sardine in a can. Another cute nuisance the six-footer will find annoying is the low roof. He'll find about a half-inch clearance between his cranium and the top. In spite of the excellent

[*Continued on page* 162]

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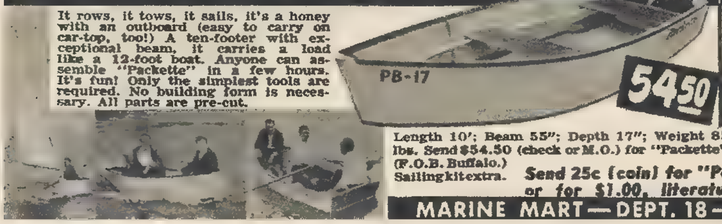

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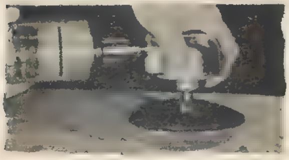

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*See description under photo of Bull Buffer kit.

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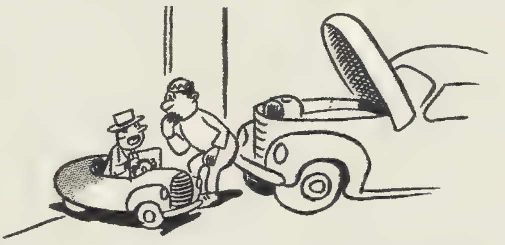
Meet the French Renault

[*Continued from page* 160]

riding qualities of the car, when you do hit bumps your skull beats out a voodoo drummer's love call against the roof.

The Renault just misses being a swell little piece of transportation. Four or five inches wider and three inches higher, and it would be an excellent small car. However, if your grandfather was a pigmy king, I highly recommend it.

The overall length of the car is 11 feet, 9½ inches. The extreme outside width is 4 feet, 8 inches. The weight of the car is 1200 pounds empty. The engine is a four-cylinder, overhead-valve job, developing 19 hp at 4000 rpm's. Piston displacement is 46.3 cubic inches. Cylinder sleeves are removable. Transmission, three speeds forward and reverse, the same as the conventional American car. Brakes, excellent, are four-wheel Lockheed hydraulic. Suspension, coil springing and hydraulic shocks on all four wheels. •



"I want a tune up. Lately I've only been getting eighty miles to the gallon."

Build Zip

[*Continued from page* 98]

Take some care to line up the motor shaft with the worm gear shaft, but exact lining is not actually necessary as the flexible (rubber tube) connection between motor and gear will absorb trifling inaccuracy here.

Solder the front wheels to the axle. Rear wheels should be mounted free. All electrical connections to switch and motor terminals are best soldered. The car illustrated has a topnotch finish which many builders may not have the patience or skill to attain. A couple of coats of clear dope should be given before sanding down and then any color dope paint applied with a final coat of gloss dope. In the detail drawing of the gear cradle it will be seen that ⅛-inch diameter brass sleeves are soldered to the worm shaft and to the front axle. These not only serve as spacers but build up the shaft diameter and make it easier to mount the worm and pinion gears. •

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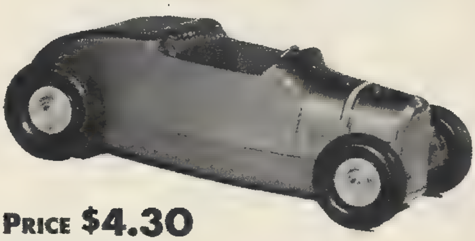

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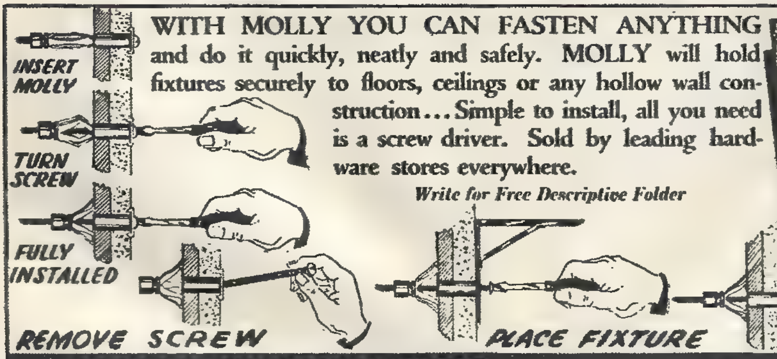

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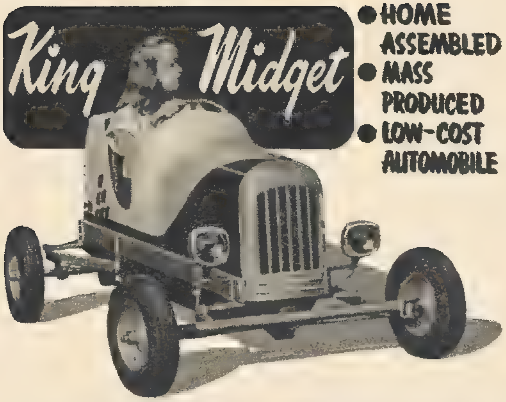

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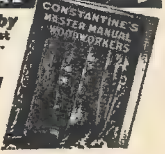

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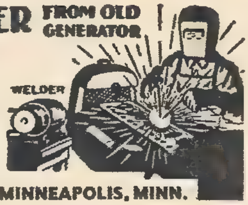

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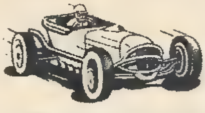

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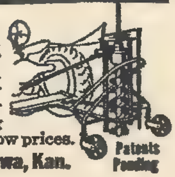

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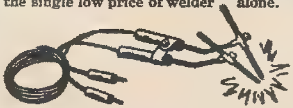

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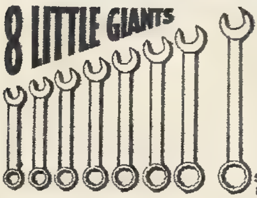

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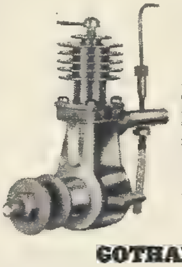

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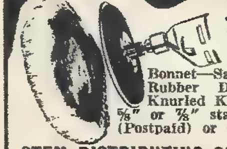

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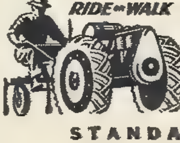

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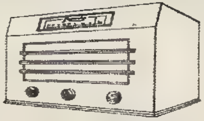
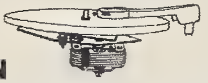
RADIO SET SCOOP



Product of a famous aircraft radio manufacturer who has abandoned the manufacture of table model radios because of the flood of government orders. All in 5 ply genuine mahogany cabinets, both regular and bleached. Original list price given first—then your cost. Sensational discounts. Model 565 is 5 tube, all others are 6 tube.

Model 565, Mah. or blonde	**$ 34.95-**	**$ 16.97**
Model 6618, Mah. or blonde	**$ 44.95-**	**$ 20.97**
Model 663, Mah. or blonde	**$ 46.95-**	**$ 21.97**
Model 612, Walnut	**$ 36.70-**	**$ 17.95**
Model 613, Mahogany	**$ 42.05-**	**$ 19.95**
Model 6612, Blonde Mahogany Console	**$215.00-**	**$105.00**

RECORD PLAYER BARGAIN



All you need for a record playing attachment for your radio except the cabinet. Special offer on phonograph arm and 115 V., 60 cycle motor, both top quality ______________$7.95

$8.95 TAKES ALL 3 BIG BARGAINS

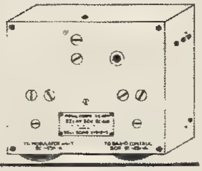
1. SENSATIONAL, FASCINATING, MYSTERIOUS SELSYNS. Brand new Selsyns made by G.E. Company. Two or more connected together work perfectly on 110V AC. Any rotation of the shaft of one Selsyn and all others connected to it will rotate exactly as many degrees in the same direction, following unerringly as if the units were connected together by shafting instead of wire.

This is true whether you twist the shaft of the master unit a fraction of a revolution or many revolutions. Useful for indicating direction of weather vanes, rotating directional antennas, or controlling innumerable operations from a distance. Complete with diagram and instructions. Per Matched Pair ______________$4.95

2. ALUMINUM GEAR BOX 18x8x7 that contains two powerful electric motors and two matched gear trains, 62 gears in all varying in size from ½ to 4 inches in diameter. This unit is readily converted to rotate a beam antenna or any other similar use ______________$5.00

3. DUAL METER—one 50 uA and one 200uA movement in the same case. This meter is ideally suited for use as a combination modulation percentage and carrier shift indicator. If desired the movements may be removed from the case and used separately for voltmeters, ohmmeters, meters, etc. All meters are in perfect operating condition, but a few have cracked glasses. This super value costs only ______________$1.75

Signal Corp Relay Box BC-616 made by Bell. Contains 6 pole double pole telephone type relays, condensers, resistors, terminals, etc. in a 6½x5½x2¼ beautiful polished aluminum case. **$1.95**



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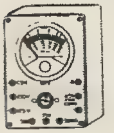
This analyzer, featuring a sensitive repulsion type meter housed in a bakelite case, represents the culmination of 15 years achievement in the instrument field by a large company specializing in electronic test equipment.



Specifications of the AC-DC ModelVolt-Ohmmilliammeter:

AC Volts—0-25, 50, 125, 250
DC Volts—0-25, 50, 125, 250
Milliamperes AC—0 to 50
DC Milliamperes—0 to 50
Ohms Full Scale—100,000
Ohms Center Scale—2400
Capacity—.05 to 15 Mfd.

Total Price, prepaid anywhere in the USA—$7.00. Similar DC Meter, lacking the AC operated ranges of above, **$5.50** prepaid.

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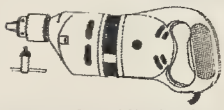

TERRIFIC VALUE

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Equipped with ¼" Jacobs Geared Chuck and Key Not an intermittent duty drill, but a full size rugged tool. Most convenient type switch, natural grip handle, and balance like a six-shooter. Precision cut gears—turbine type cooling blower—extra long brushes. No stalling under heaviest pressure because of powerful 110 Volt AC or DC motor and multiple ball bearing thrust. Other bearings self-aligning lifetime-lubricated Oilite type. Made for toughest year-in and year-out service in plant or on construction jobs. Amazing perpetual factory guarantee assures you of a lifetime of trouble-free use. **Full refund (you pay transportation) if not pleased with drill after trial.**

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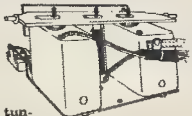
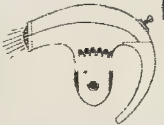


The entire variable tuning section of a deluxe current model General Motors radio. Amazingly tiny (4x3x2½), though truly half of a radio. Shielded R. F. sections litz wire wound. All 3 tuned circuits adjustable at both low and high ends of dial. Compact enough to be used to pep up any 2 or 3 gang superhet or 2 gang TRF. Will substitute for entire original tuning system including variable condenser or if desired the original tuning condenser can be connected to these coils, and the coils set to proper inductance (no instruments required), and the set tuned just as before, although much greater sensitivity and selectivity will result. Can be used as a multiple section wavetrap that will cut out undesirable interference as with a knife, or if only a little bit better than average results with a slug-tuned wavetrap are necessary, the unit can be split up in a couple of minutes into 3 coils that can be used on 3 different jobs. These coils, supercompact and really hot, can also individually replace any broadcast band RF, oscillator, or 1st detector coil with improvement in results in any set. After seeing one of these units, you'll order a dozen just for general repair or replacement work. Cost the manufacturer several dollars. Your cost **$1.49.**

HEAT GUN



Streamlined pistol grip heat gun in vivid red housing, that delivers a powerful 20 Cubic Ft. per minute blast of hot air at 160 Fahrenheit. Ordinary blowers have small fan motors, but this has a lifetime-lubricated AC-DC motor of the rugged vacuum cleaner type, that produces a hurricane of either hot or cold air. Perfect for blowing out dirt or dust from radio chassis, drying out ignition systems, warming up carburetors, quick-drying paint, thawing out radiators or water pipes, etc. Warning: Keep this away from your wife, or she will be using it to dry her hair because it will do it in half the time of her ordinary hair dryer to say nothing of her using it to dry stockings or clothing, or defrost the refrigerator instantly. Only **$12.95.** Satisfaction guaranteed or money refunded if returned prepaid within 5 days.

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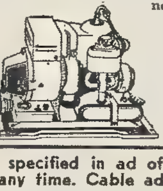
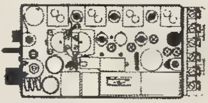
This power plant consists of a gasoline engine that is coupled to a 2000 watt 32 volt DC generator. This unit is ideal for use in locations that are not serviced by commercial power or to run any of the surplus items that require 24-32v-DC for operation. The price of this power plant tested and in good condition is only **$79.95** F.O.B. Buffalo, or we can supply in strictly "as is" condition for **$58.95** F.O.B. New York City. These latter are exactly as received, in heavy steel-strapped gov't cases, and we are unable to determine if the individual units are new, or what the condition is if used, while the **$79.95** are some of the same that we have brought to Buffalo for testing and repair if necessary. We do not recommend gambling on the "as is" condition, except for quantity purchasers. We can also supply a converter that will supply 110v AC from the above unit or from any 32v DC source for **$12.95.**



RT1655

***Only* $14⁹⁵**



11 tube crystal controlled **superheterodyne receiver** that covers the FM band. The ultra modern circuit uses the lastest types of tubes including 7 miniature 6AJ5's. Beautiful chassis and aluminum cabinet. Tubes and diagram included.

RT1579

With Tubes, Diagram and Parts List

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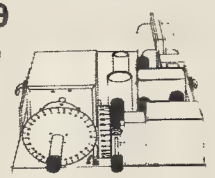
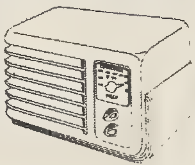
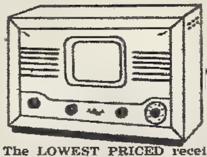


Consists of a three stage (cascade 6SJ7's and 6F6 output stage) high gain, high fidelity amplifier with 60 cycle, 110V power supply on the same 13½x14½ chassis, which is protected by a substantial steel cover over tubes and parts. Made by Western Electric with typical quality components such as a husky power transformer and oil condensers. this unit is obviously intended to give years of trouble-free service with no more need for repairs than a telephone. Disconnecting one wire each, from the special input and output filters, will result in as high a fidelity amplifier as can be obtained.

An FM Tuner that can be quickly connected to any radio by anyone. No radio knowledge necessary. Enjoy static-free reception, better tone and the many fine programs that are unavailable on the standard broadcast band. Only **$19.95**





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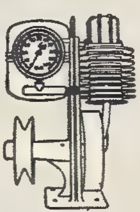

Portable Air Compressor and storage tank. Ruggedly built of best materials using lifetime lubricated ball-bearing on connecting rod and oil impregnated main bearing on shaft. Unusual design forever eliminates valve trouble, the most common fault in air compressors. **PATENTED** unique air intake system increases efficiency tremendously over other compressors so that air output is much greater than that from larger compressors powered by heavier motors. Will deliver approximately 3500 cu. inches of air per minute at maintained pressure of 30 lbs., or will inflate a 90 lb. truck tire in less than one minute. Comes complete with 100 lb. gauge, although finger-tip adjustment allows setting of output pressure at any value, which will automatically be maintained. Works from any ¼ H.P. motor. Useful for spraying paints or lacquers, disinfectants, insecticides, annealing or brazing with natural gas, inflating tires, etc. Price **$14.50** postage prepaid anywhere in the U.S. Efficient, completely adjustable syphon type spray gun complete with 12 ft. of 100 lb. tested hose available for only **$7.75** with pint container, also prepaid. 25% required on all C.O.D. orders.

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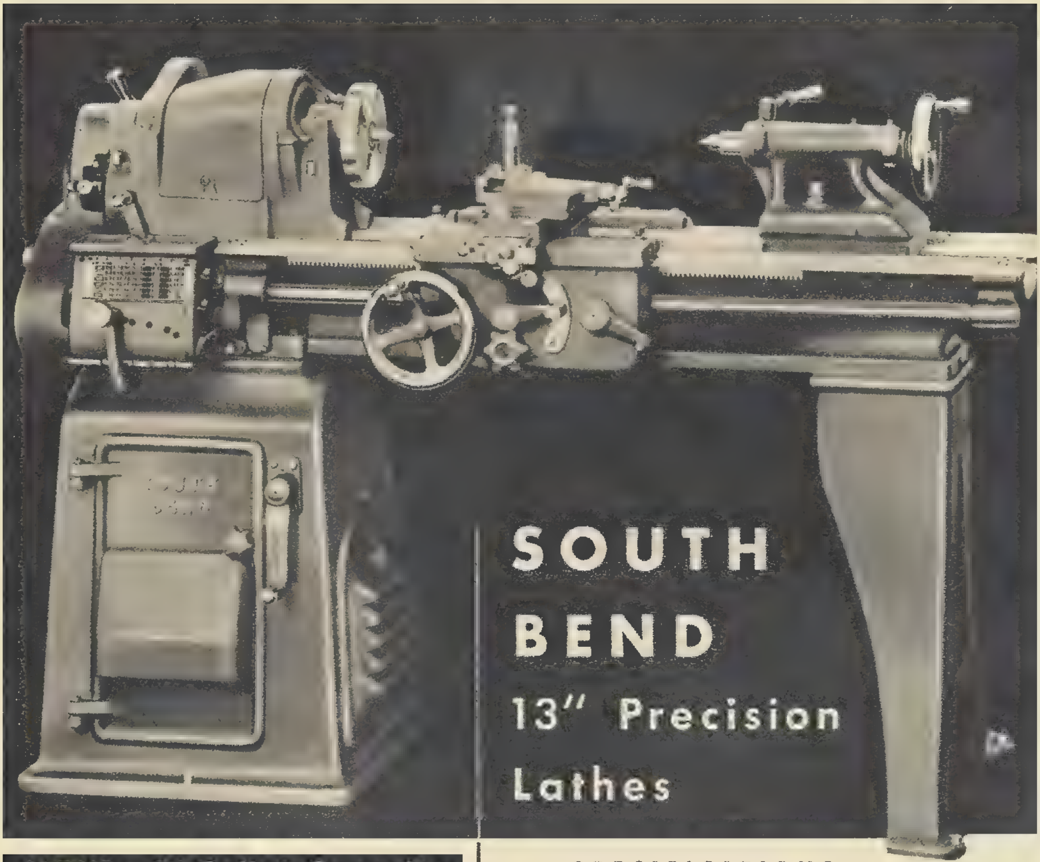

SOUTH BEND 13″ Precision Lathes

NOW – 1″ Collet Capacity

Catalog No. 145-B 13″ x 5′ Quick Change Gear Lathe with 3 phase, 60 cycle, 220 volt, A.C. motor and drum switch; f. o. b. factory **$1332.25**

South Bend 13″ Precision Lathes now offer even more advantages where close-tolerance machining is required. They are economical, accurate, fast, and versatile. The new headstock with increased collet capacity permits a greater variety of collet jobs. Substantial savings in capital investment, floor space, and labor cost often result from their installation.

The Quick Change Gear model is popular for production operations, maintenance and service work. The Toolroom model has sufficient capacity for a large variety of toolroom work—its accuracy insures perfect results. Numerous tools and attachments are available for special jobs. Other South Bend Precision Lathes are made with 9″, 10″, 14½″, 16″, and 16/24″ swings. Also Precision Turret Lathes with ½″ and 1″ collet capacities, a 14″ Drill Press in bench and floor models, and a 7″ Bench Shaper. Immediate deliveries can be made. Time Payment Plan is available.

SPECIFICATIONS

SWINGS: 13-1/8″ over bed and saddle wings; 8-3/4″ over saddle with chip guard removed.

BED LENGTHS	4, 5, 6, and 7 feet
DISTANCE BETWEEN CENTERS	16 to 52 inches
MAXIMUM COLLET CAPACITY: 1″ (Collets interchangeable with South Bend 10″-1″ collet, Series 1000, 14½″, 16″, 16/24″ Lathes)	
SPINDLE BORE	1-3/8 inch
SPINDLE SPEEDS: Eight	34 to 875 r. p. m.
POWER LONGITUDINAL FEEDS: 48 R.H. or L.H.,	.0015″ to .0841″
POWER CROSS FEEDS: 48	.0006″ to .0312″
THREAD CUTTING: 48 R.H. or L.H. pitches	4 to 224 per inch
CROSS SLIDE TRAVEL	8-1/8 inches
TAILSTOCK TOP SET-OVER	15/16″

Write FOR THIS CATALOG NO. 73

Describes and illustrates new South Bend 13″ Precision Lathes with 1″ maximum collet capacity. Includes complete specifications and prices.

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AIR WAR OVER THE ARCTIC

Our planes are waging a relentless battle to conquer polar cold and guard America against sneak attacks across the world's roof.

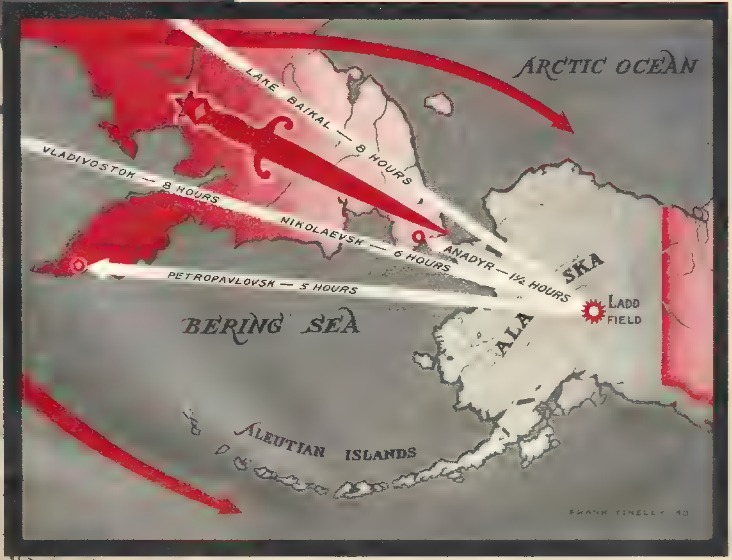
By Major General K. P. McNaughton, U. S. Air Force

FOR nearly four centuries the Arctic defied the hardiest explorers from the temperate zones. This vast ice-locked world with its midnight sun, Aurora Borealis and paralyzing cold has been an impregnable barrier across the shortest route between the East and West.

Now the development of long-range aircraft is wiping out that barrier and, for the first time, exposing America to bombing and invasion by air. The polar regions have become vitally important to our national defense. For, should that dreaded World War III suddenly explode upon us, the key battles probably will be decided in the air over the Arctic.

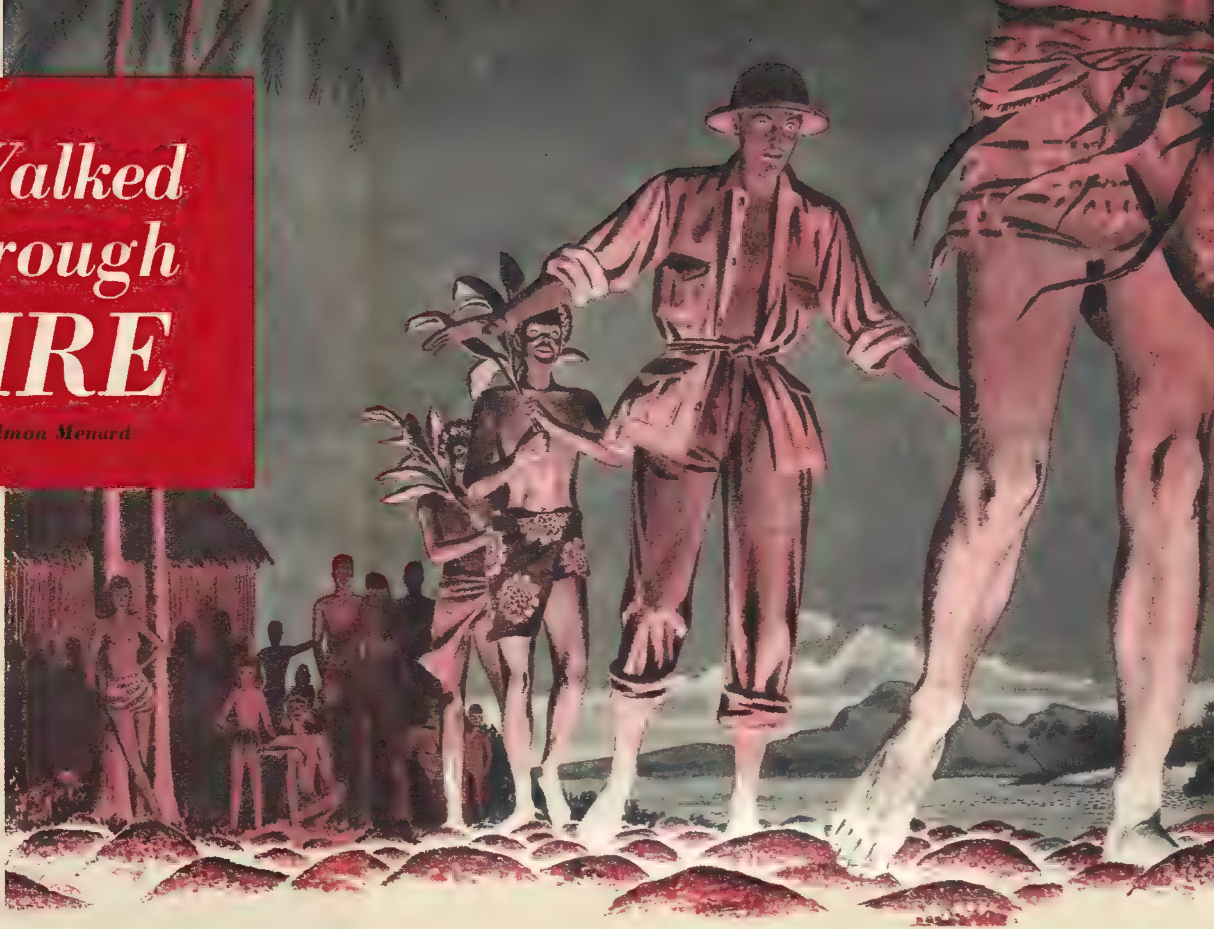
By traveling the polar routes, military aircraft now

If East-West tension bursts into war, B-36s based at Ladd Field, Alaska, could knock out the Trans Siberian railway and cripple Russia's power in Asia. B-36 flying time to possible Soviet targets is shown in white arrows. Red dagger, arrows mark our danger points.


ARCTIC OCEAN
LAKE BAIKAL — 8 HOURS
VLADIVOSTOK — 8 HOURS
NIKOLAEVSK — 6 HOURS
ANADYR — 1½ HOURS
PETROPAVLOVSK — 5 HOURS
ALASKA
LADD FIELD
BERING SEA
ALEUTIAN ISLANDS
FRANK TINSLEY 49

I Walked Through FIRE

By Wilmon Menard



That red-glowing pit on the South Sea island fascinated the author. He never thought he'd be lured into the flames.

"YOU'RE going to be sorry!" shouted one spectator as I kicked off my shoes and stood before the fiery pit.

A moment ago I had been just a sightseer standing among the spectators gathered in a sacred grove on the South Sea island of Raiatea to witness a strange fire-walking ceremony. Now I was feverishly getting ready to walk barefooted through the fire myself.

The big rocks in the fire-pit glowed bright red in the faint light of dawn. Now and then the fire tenders, their bodies gleaming with smeared coconut oil, passed briefly between the open furnace and me as they raked out the last of the log cinders and leveled the hot rocks. It looked like a preview of hell.

Here's how I got myself into this hot spot and became a fire-walker:

Even more than the other spectators who had sailed 135 miles from Papeete, Tahiti, I had been intensely interested in every phase of the mysterious *Umuti* (Fire-Walk) of Raiatea. Luckily, the very day I arrived on the island Chief Terii Pa'o, the head fire-walker, called an *Umuti* to honor two great goddesses of ancient days, the Goddess of the Moon and The-Great-Woman-Who-Set-Fire-To-The-Sky.

I wandered beyond the village of Tevaitoa and watched the natives digging the pit—30 feet long, 15 feet wide and 4 feet deep. I saw huge stones rolled into a high mound in the pit and followed the progressive heating of this rock furnace during two entire days.

Then the laughter, singing and loud talking among the spectators stopped. Terii Pa'o, clad in his native loin cloth and decked with garlands of sacred *ti* leaves, was stepping forth from his near-by coconut palm temple. All eyes stared at the handsome chief as he slowly waved his *ti*-leaf wand and led off the fire-walking procession.

He turned, caught my eye and smiled. Once we had sailed aboard a schooner together to Anaa, an atoll in the Dangerous Archipelago known for its pearl-rich waters. I had presented him with a can of salmon and we had become good friends.

Now the spectators swarmed about Terii Pa'o and closely inspected his feet to see if they had been coated or specially treated to be protected against the intense heat of that rock furnace. He grinned indulgently at their thorough examination.

I saw one of the tourists turn away and walk to the edge of the fiery pit. He gazed at the open furnace for a few seconds. Then, with a groan, he covered his face with his hands and backed off. His neck and face turned scarlet, his eyes glazed and streamed with tears.

Another tourist took a long look and dropped a handkerchief upon the rocks.

Instantly it seared and turned to a grey powder.

Chief Terii Pa'o, with head high and eyes uplifted to the sky, walked up to the fire pit with his swaying branch of ti leaves. He struck the rocks three times with his ti wand, then began chanting the ancient fire-walking prayer. Knowing the Tahitian tongue, I listened closely.

"O being spirits, who enchant the fire pit, let it die out for a while! O dark earthworms! O light earthworms! Fresh water and salt water, heat of the fire pit, darkening of the fire pit, hold up the footsteps of the walkers and fan the heat of the bed. O cold hosi, let us linger in the midst of the fire pit. O Great Woman-Who-Set-Fire-To-The-Skies, hold the fan and let us go into the fire-pit for a little while!"

Then followed a measured count of the ten first steps to be made upon the fiery pit. Finally Terii Pa'o uttered a loud and exultant shout:

"O Great Woman Who Set Fire To The Sky! All is covered!"

I shall never forget the great sigh and then the hush that followed Terii Pa'o's first step upon the pit. He hesitated a moment as if to be sure that the stones would not shift under his weight. Then, proudly he walked onto the glowing bed of rocks.

The tourists gasped. The natives sat stiffly erect, unmoving. They seemed to be in a trance.

Terii Pa'o walked once more across the pit and then turned and recrossed it. His followers formed a line behind him upon his return. Again Terii struck the stones with the ti leaves. Then, followed by a single-file procession of his assistants, he walked with firm steps across the center of the fire pit.

I could see the heat waves shimmering above their heads, but there was no odor of burning flesh, as I half expected. They had traversed the pit now and Terii raised his ti leaves, the signal for the column of walkers to face about and march back through the fire.

They walked across the pit three times.

A native uses the ancient process of rubbing two pieces of wood together to make fire in the pit.

Chief Terii Pa'o walks calmly across the burning rocks with his ti branch as the spectators gasp.

After the third crossing, Terii stopped a short distance from the furnace and cried:

"Atira. Enough!"

Then abruptly he turned and crawled across the 30-foot expanse of glowing stones on his stomach.

At the other side of the pit, he stood up and beckoned to the tourists to make their inspection. One of them placed his palm to the soles of Terii's feet and marveled that they were "cold." The feet of the fire-walkers were not even marked by their passage through the burning pit. The examination over, the tourists withdrew, baffled by the miraculous defiance of fire.

Terii then turned to the gaping natives and urged those afflicted with physical or mental pain, needing spiritual purification or wishing to test their courage against fire:

"Follow me across the fire-pit!"

Passing close to me, he caught my eye again and grinned:

"Perhaps you would like to walk behind me? You have lived long in our islands and understand our customs and ceremonies. But, if you are afraid, it would be dangerous to attempt the fire-walk."

It was his challenging remark on my courage that convinced me to risk a walk through the fire and made me kick off my shoes and cry:

"Haere tatou. Let's go!"

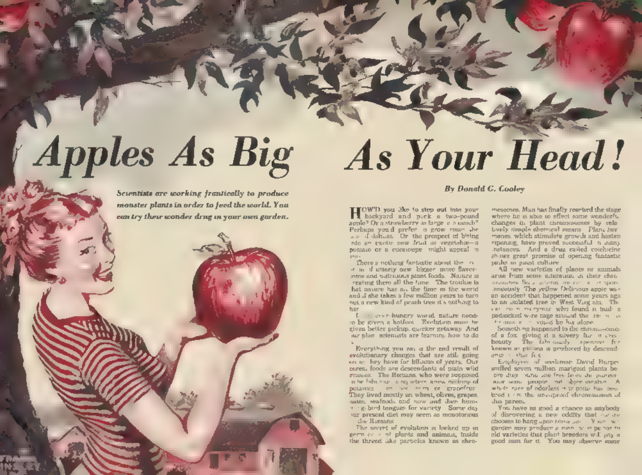
With a show of bravery I didn't feel, I stepped into line behind Terii.

My bravado shrank with every step. I was badly frightened and cursed the impulse that made me accept Terii's challenge to follow him through the fire.

My throat throbbed taut and dry and my stomach felt like a nest of crazy butterflies. My heart hammered violently; my head ached.

I've always had a fear of fire and now I shuddered as I stared with nightmarish fascination at the seething fire-pit ahead. I no longer cared what Terii and all those spectators might say—I wanted to bolt.

But the priest [Continued on page 153]



Apples As Big As Your Head!

Scientists are working frantically to produce monster plants in order to feed the world. You can try their wonder drug in your own garden.

By Donald G. Cooley

HOW'D you like to step out into your backyard and pick a two-pound apple? Or a strawberry as large as a peach? Perhaps you'd prefer to grow roses the size of dahlias. Or the prospect of biting into an exotic new fruit or vegetable—a pomato or a cucatoupe—might appeal to you.

There's nothing fantastic about the creation of utterly new, bigger, more flavorsome and nutritious plant foods. Nature is creating them all the time. The trouble is that nature has all the time in the world and if she takes a few million years to turn out a new kind of peach tree it's nothing to her.

[illegible] ever-hungry world, nature needs to be given a hotfoot. Evolution must be given better pickup, quicker getaway. And our plant scientists are learning how to do it.

Everything you eat is the end result of evolutionary changes that are still going on as they have for billions of years. Our cereal foods are descendants of plain wild grasses. The Romans, who were supposed to be fabulous [illegible], knew nothing of potatoes, [illegible] or grapefruit. They lived mostly on wheat, olives, grapes, dates, seafoods, and now and then hummingbird tongues for variety. Some day our present diet may seem as monotonous [illegible] the Romans'.

The secret of evolution is locked up in germ cells of plants and animals, inside the thread-like particles known as chromosomes. Man has finally reached the stage where he is able to effect some wonderful changes in plant chromosomes by relatively simple chemical means. Plant hormones, which stimulate growth and hasten ripening, have proved successful in many instances. And a drug called colchicine shows great promise of opening fantastic paths in plant culture.

All new varieties of plants or animals arise from some alteration in their chromosomes. Such alterations [illegible] spontaneously. The yellow Delicious apple was an accident that happened some years ago to an isolated tree in West Virginia. The [illegible] nurseryman who found it built a padlocked wire cage around the [illegible] would be his alone.

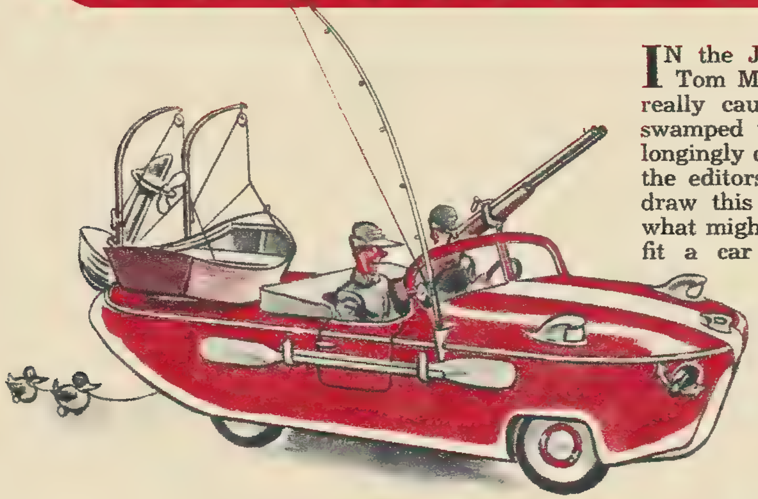
Something happened to the chromosomes of a fox, giving it a silvery fur of rare beauty. The fabulously expensive fur known as platina is produced by descendants of that fox.

Employees of seedsman David Burpee sniffed seven million marigold plants before they found one free from the [illegible] odor some people find objectionable. A whole race of odorless marigolds has been bred from the [illegible] chromosomes of this parent.

You have as good a chance as anybody of discovering a new oddity that nature chooses to hang upon some [illegible]. Your own garden may produce a plant so superior to old varieties that plant breeders will pay a good sum for it. You may observe some

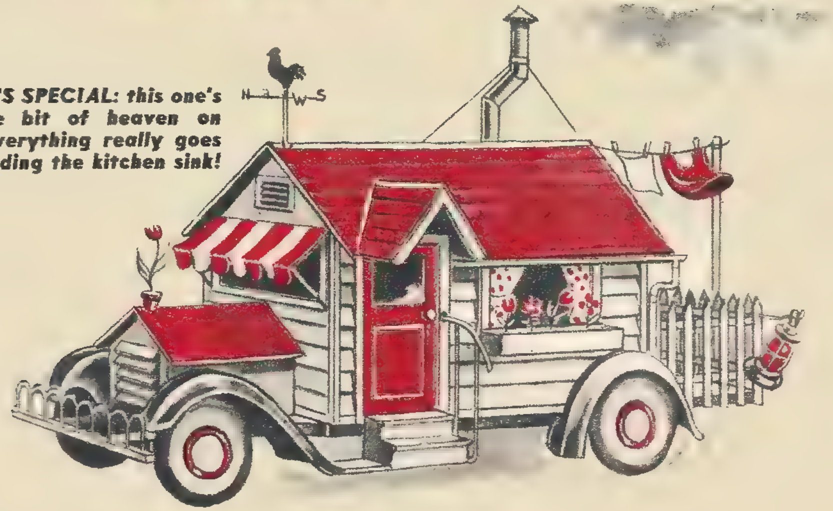
dream cars you'll never see

IN the January MI we showed you Tom McCahill's dream car. And it really caught your fancy. We were swamped with letters, many of which longingly described pet dream cars. So, the editors asked artist Doug Rolfe to draw this set of cartoons to illustrate what might happen if Everyman would fit a car to his own personality. •

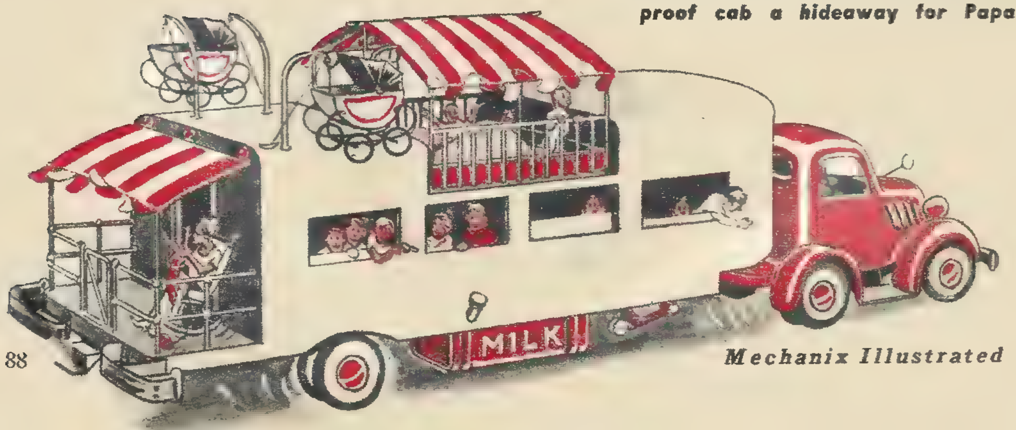


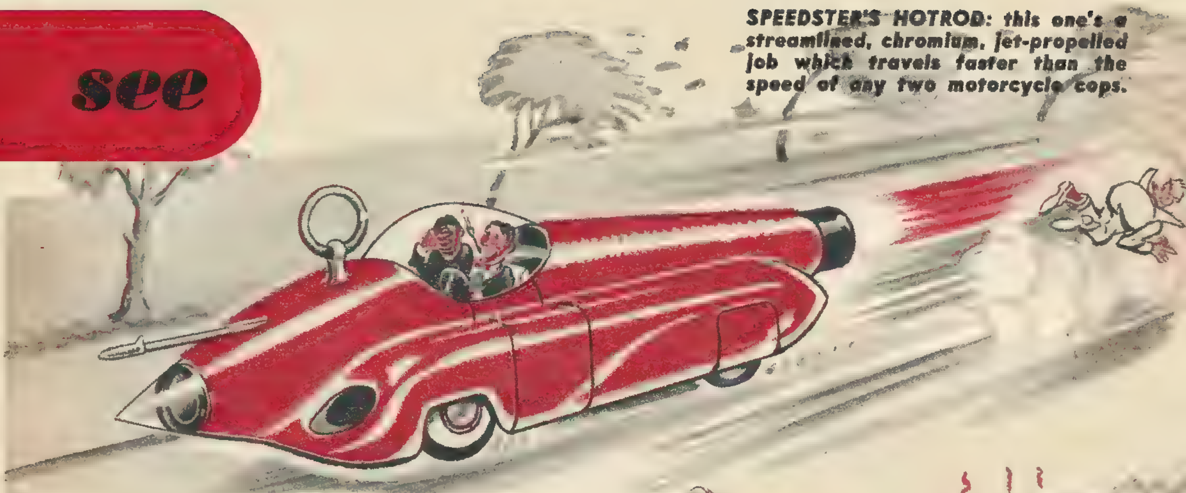
SPORTSMAN'S MODEL: *good on land and sea. It's equipped with rods, paddles, elephant guns, LaCrosse sticks, fencing masks and cricket bats.*

HOMEBODY'S SPECIAL: *this one's just a little bit of heaven on the road. Everything really goes along—including the kitchen sink!*



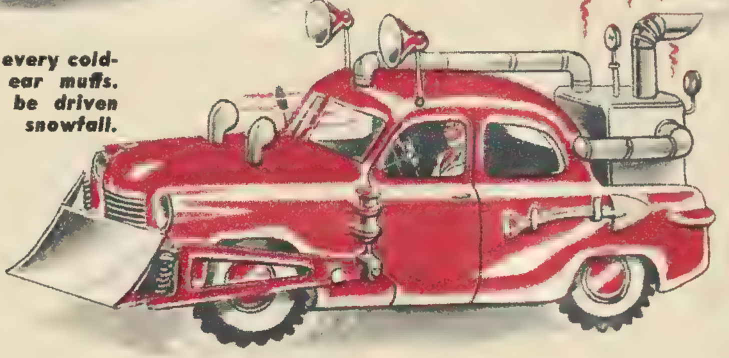
FAMILY MAN'S BUS: *room for all the juniors and junioresses. Porch far in the rear is for the wife, the soundproof cab a hideaway for Papa.*

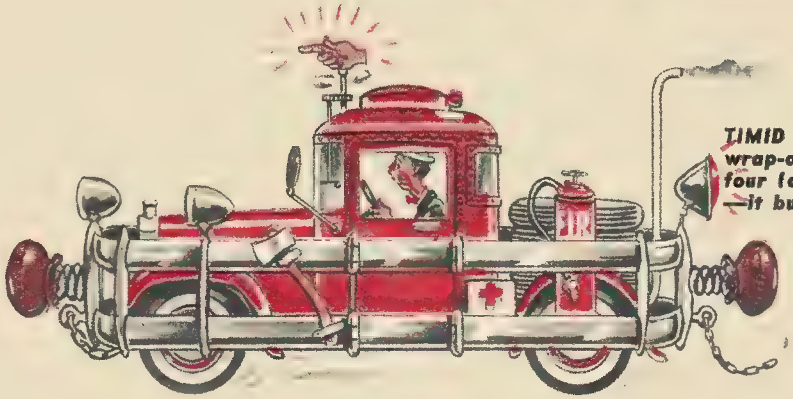




SPEEDSTER'S HOTROD: *this one's a streamlined, chromium, jet-propelled job which travels faster than the speed of any two motorcycle cops.*

WINTER DRIVER'S CAR: *has every cold-weather accessory except ear muffs. One thing wrong: it can't be driven unless there's a 20-inch snowfall.*

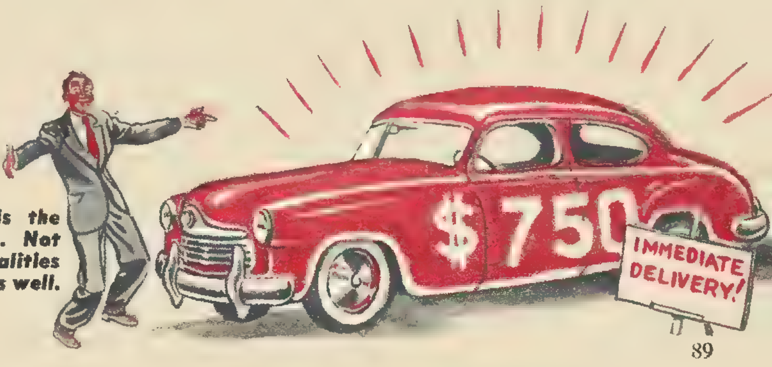




TIMID SOUL'S VEHICLE: *it's got wrap-all-the-way-around fenders and four (count 'em) spare tires. Oh yes —it burns non-inflammable gas, too.*

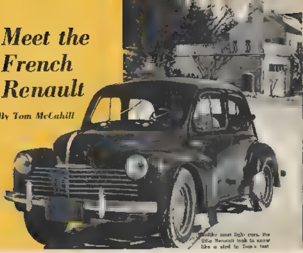
DOUGLAS
ROLFE

YOURS AND MINE: *this is the most fantastic of 'em all. Not only does it fit our personalities but it fits our pocketbooks as well.*



Meet the French Renault

By Tom McCahill



Unlike most light cars, the little Renault took to snow like a sled in Tom's test

Tom tries out the baby Renault for size against his new Ford (4). That low top literally gave him a beating. You can see how he had to shimmy into the car (5) for a head-banging ride.

WHEN I squeezed behind the wheel of the new Renault I felt like Man Mountain Dean jumping on a Shetland pony for a fast game of polo—only to find pony-like characteristics which were a real surprise. Even so, the Renault is definitely not made for guys of my displacement.

If you are average size or smaller, then this little rear-engine car from France is something to think seriously about. It sells for $1350 delivered in New York and gets 40 miles to a gallon of gas. Considering today's general automobile prices, that isn't any worse than paying $2000 for a two-door Ford sedan.

Another way of describing the Renault might be to call it the devalued-franc version of the American Tucker because of the engine in the rear. This is a four-cylinder overhead valve job that develops only 19 hp. This makes it the lowest-horsepowered automobile being offered anywhere today. But here is a catch to this. The Renault weighs only 1250 pounds. With this ratio of weight to horsepower it doesn't come off too badly when compared with its nearest competitors, the other lightweights such as the Crosley, Hillman Minx, Austin or Ford Prefect. These all weigh from several hundred to a thousand pounds more.

Frankly, in my opinion, the Renault will beat the cars of its competitors in performance, riding comfort and roadability. It has independent springing on all four wheels and rides like a 3000-pound car—without the dipsy-doodle characteristics of American cars when their wheels are independently sprung. This little paperweight hugs the road as well as our largest American cars.

When it comes to steering, the Renault is miles ahead of anything we build, including the Cadillac. The little French car has the quick continental steering qualities that make for safe driving—qualities we discarded for our present tire monstrosities, the low pressure wonders.

The day I made my test run, the ground was covered with snow and ice. This was far from an ideal condition, especially for a lightweight car. Was I surprised! I shot up icy hills and around snow-covered turns. Never once was there the slightest suggestion of a skid or wheel spin.

At one point, I was descending a long hill covered with ice and saw at the bottom, a sharp right-angle turn. I said to Mr Huber, the company man riding with me, "How about it?"

"Open her up and hit it hard. She'll hold," he answered.

"This goat belongs to you, brother. Let's go," I said.

We were doing [Continued on page 160]

McCahill's big Labrador Retriever was more at home in the roomy front-end baggage compartment than he was when he packed himself behind the wheel. Those double slots at the stern (2) ventilate the Renault's rear-end engine. In Picture 1 Tom takes a look at that small but efficient 19-hp motor.

A MONEY-MAKING
idea

Crawford picks up a phone in his office and starts chasing a star.

First, the rush call clears through the switchboard in the phone-filled main office.

Hollywood Star Chaser

Tired of being a fall guy for films, this stunt man got on the phone and called up a fortune

By Carl Crawford

MAYBE [illegible]

[illegible]

[illegible]

[illegible]

[illegible] club [illegible]

No. con help you the time [illegible] wonder regrets.

Found at last, Paulette Goddard [illegible]

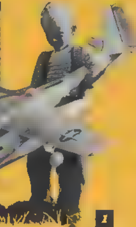
Workbench Award Winners...

MECHANIX ILLUSTRATED

Award

WIN A WORKBENCH AWARD

To the builder of each project pictured on these pages we [illegible] the [illegible] Workbench Award certificate shown above which measures 10x[illegible] in. Also a five-dollar check. If you'd like to see your project in MECHANIX ILLUSTRATED and have the certificate, to say nothing about the extra five dollars worth of tools you can buy, then send a photo of your creation today [illegible] Workbench Mechanix Illustrated, 67 West 44th Street, New York [illegible] N. Y.


1

2

3

4

5

6

P[illegible] James [illegible] New York [illegible] John [illegible] The [illegible] to zoom [illegible] [illegible] 194[illegible] Mechanix Illustrated [illegible]

[illegible] this type "PHOTO [illegible] California, [illegible] boat [illegible] Wright Engines [illegible] playthings [illegible] last spring [illegible] cost [illegible] two [illegible] two [illegible] tested [illegible] constant length [illegible] back [illegible] Sedan [illegible] race [illegible]

[illegible] using a 1 to 1 gear [illegible] a rail track [illegible] for a [illegible] stock [illegible] PHOTO 6 "SN[illegible] MI [illegible] design which [illegible] readers [illegible] carefully built [illegible] Charles [illegible] Charles [illegible] [illegible] ●

make this MIDGET RADIO SET

By Robert Hertzberg

SINCE the turn of the century, the science that has made the most rapid and certainly the most sensational advances has been that of radio-electronics. First, there was the miracle of "wireless" communication itself and its dramatic role in saving life at sea. Shortly after World War I, sound broadcasting gave a new dimension to mass entertainment and edification. Following World War II, radar emerged from behind a wall of secrecy to arouse public interest. Only in the last two years, television has become the young giant of the electronics art.

Despite this vast technological upsurge, one item of equipment is in use today in precisely the form in which it was introduced more than 40 years ago: the crystal detector. Mention the crystal to anyone old enough not to worry about the peacetime draft and his invariable remarks are, "Crystal sets? Heck, didn't those things go out of date with plus fours and running boards? Who wastes time these days playing with a catwhisker?"

Crystals did not go out of date at any time. They are still very effective devices, within their recognized limitations, for beautifully clear and noiseless reception of sound broadcasting, and they play an important part in the operation of radar sets. Crystal radio receivers possess three outstanding features: they are simple to build and therefore ideal for beginners; they are extremely cheap, even in these days of inflated prices; and they require no power of any kind, from either batteries or the house line.

A complete crystal receiver consists merely of a small coil, a couple of small condensers, the crystal detector itself, and a pair of earphones. For satisfactory results, an outside aerial is necessary. The longer and higher it is, the better. A good average length is 100 ft., including the wire that runs into the house. The function of the aerial is to pick up radio waves and to feed them to the crystal. The latter changes them into a form of electricity capable of actuating the earphones, but it does not amplify or strengthen them the way electron tubes do. The aerial *must* be big to scoop up enough energy to make an impression in the phones.

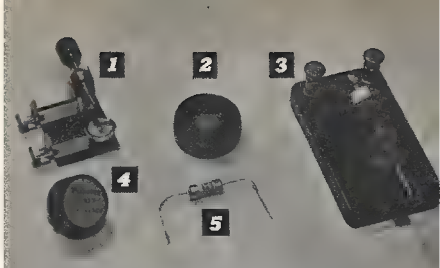
You pay for the cheapness and simplicity of crystal sets in the form of limited range and poor selectivity. A lot depends on location, but reliable reception on the regular broadcast band can be expected only up to distances of about 25 to 35 miles. This statement is certain to bring indignant letters from crystal-set owners who get excellent signals from stations 250 to 350 miles away. With a particularly sensitive crystal, a good location, and a dash of luck, reception up to a thousand miles is occasionally reported. The best time for DX (long distance) is late at night, during cold winter weather.

"Selectivity" is the ability of a radio receiver to separate stations. Crystal sets without exception tune very broadly. It is possible, through the use of certain circuit tricks, to increase the selectivity to a fair degree, but the trouble is that the signals themselves more or less expire in the process. The receiver to be described in this article has as much selectivity as can be attained without noticeable sacrifice of results.

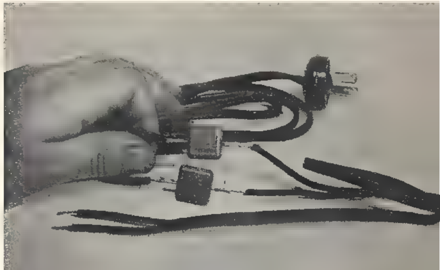
You may ask, "Aren't earphones something of a nuisance?" Far from it. They put weak signals right into the ear, where they belong, and they shut out room noises. Any father who makes this set for a youngster will quickly learn that the earphones have a special appeal. The small fry will sit still, almost as if in a trance, while listening to programs. For any radio experimenter, a pair of earphones is a good investment because it will prove necessary and valuable later for use with a short-wave receiver.

Claims are made for some crystal sets that they will operate a loud speaker. *Any* crystal set will if it is close enough to a powerful broadcasting transmitter. How close is "close enough?" There's no way of telling except by trying. Just don't figure on it in advance.

The "crystal" part of a crystal detector is a small chunk of silicon, perikon, iron pyrite, carborundum, or

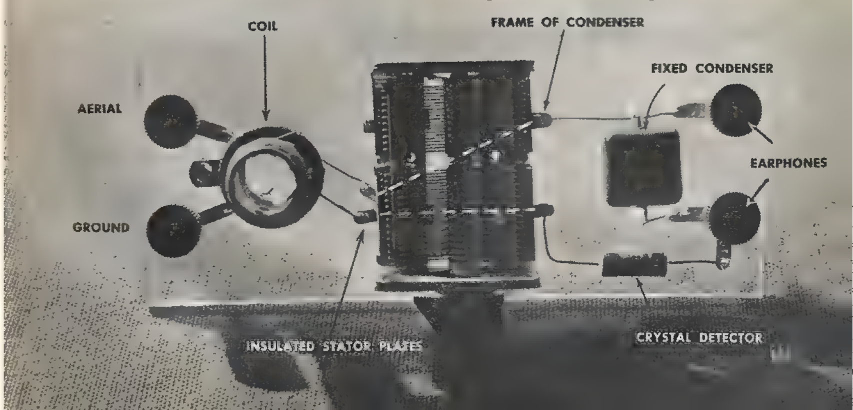


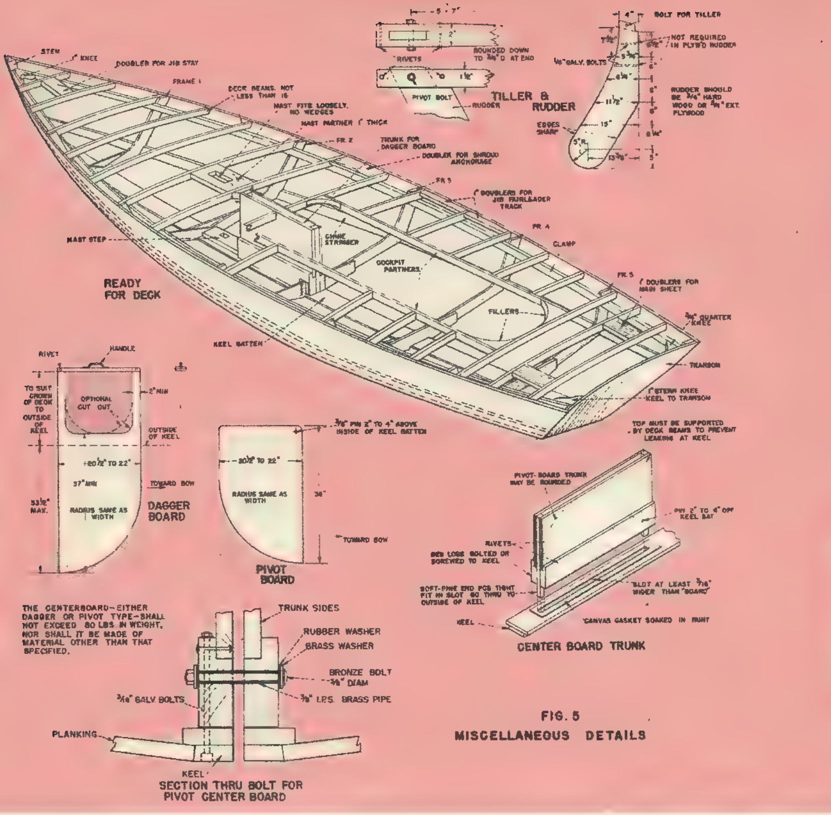
Representative crystal detectors: 1 and 3—adjustable "catwhisker" types; 2—crystal unit without leads, in carrying case; 4—fixed type, fully enclosed; 5—germanium type, with connecting leads.



Splice the two postage-stamp condensers into a power wire to form an "aerial cord." The exposed bits of wire either side of the condensers should be thoroughly insulated with electrician's tape.

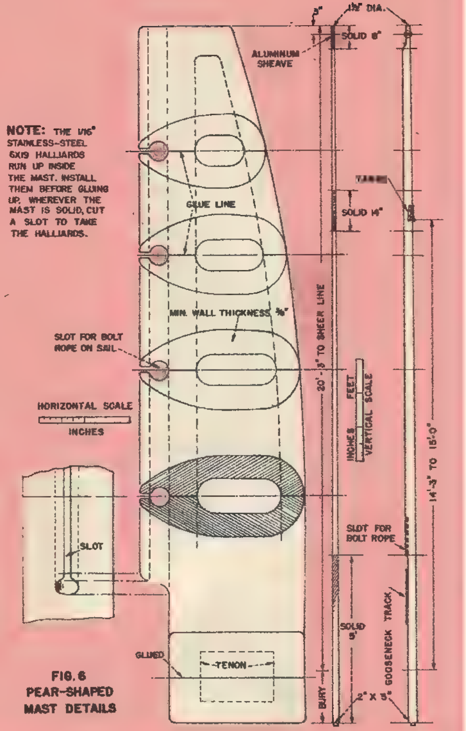
Clearly shown here is the simplicity of our crystal-receiver hookup. While a double variable condenser is depicted, only one section is actually used.




STEM
1" KNEE
DOUBLER FOR JIB STAY
FRAME 1
DECK BEAMS NOT LESS THAN 16
MAST FITS LOOSELY. NO WEDGES
MAST PARTNER 1" THICK
FR. 2
TRUNK FOR DAGGER BOARD
DOUBLER FOR SHROUD ANCHORAGE
FR. 3
DOUBLERS FOR JIB FAIRLEADER TRACK
FR. 4
CLAMP
MAST STEP
CHINE STRINGER
COCKPIT PARTNERS
FR. 5
DOUBLERS FOR MAIN SHEET
FILLERS
3/4" QUARTER KNEE
KEEL BATTEN
TRANSOM
1" STERN KNEE KEEL TO TRANSOM
READY FOR DECK
5 · 7"
2"
RIVETS
ROUNDED DOWN TO 3/4" D AT END
1 1/2"
PIVOT BOLT
RUDDER
TILLER & RUDDER
4"
BOLT FOR TILLER
NOT REQUIRED IN PLYW'D RUDDER
1/4" GALV. BOLTS
6"
11 1/2"
15"
EDGES SHARP
5" R.
13 7/8"
RUDDER SHOULD BE 3/4" HARD WOOD OR 3/4" EXT. PLYWOOD
RIVET
HANDLE
TO SUIT CROWN OF DECK TO OUTSIDE OF KEEL
OPTIONAL CUT OUT
2" MIN
OUTSIDE OF KEEL
20 1/2" TO 22"
37" MIN
TOWARD BOW
33 1/2" MAX.
RADIUS SAME AS WIDTH
DAGGER BOARD
3/8" PIN 2" TO 4" ABOVE INSIDE OF KEEL BATTEN
20 1/2" TO 22"
RADIUS SAME AS WIDTH
36"
TOWARD BOW
PIVOT BOARD
TOP MUST BE SUPPORTED BY DECK BEAMS TO PREVENT LEAKING AT KEEL
PIVOT-BOARD TRUNK MAY BE ROUNDED
PIN 2" TO 4" OFF KEEL BAT
RIVETS
BED LOGS BOLTED OR SCREWED TO KEEL
SOFT-PINE END PCS TIGHT FIT IN SLOT GO THRU TO OUTSIDE OF KEEL
SLOT AT LEAST 3/16" WIDER THAN "BOARD"
KEEL
CANVAS GASKET SOAKED IN PAINT
CENTER BOARD TRUNK
TRUNK SIDES
RUBBER WASHER
BRASS WASHER
BRONZE BOLT 3/8" DIAM
3/16" GALV. BOLTS
3/8" I.P.S. BRASS PIPE
PLANKING
KEEL
SECTION THRU BOLT FOR PIVOT CENTER BOARD

THE CENTERBOARD—EITHER DAGGER OR PIVOT TYPE—SHALL NOT EXCEED 80 LBS IN WEIGHT, NOR SHALL IT BE MADE OF MATERIAL OTHER THAN THAT SPECIFIED.

FIG. 5
MISCELLANEOUS DETAILS


1 1/2" DIA.
3"
SOLID 6"
ALUMINUM SHEAVE
GLUE LINE
SOLID 14"
MIN. WALL THICKNESS 3/8"
SLOT FOR BOLT ROPE ON SAIL
20'-3" TO SHEER LINE
HORIZONTAL SCALE
INCHES
FEET
INCHES
VERTICAL SCALE
14'-3" TO 15'-0"
SLOT
SLOT FOR BOLT ROPE
SOLID 5'
GOOSENECK TRACK
GLUED
TENON
BURY
2" X 5"

NOTE: THE 1/16" STAINLESS-STEEL 6X19 HALLIARDS RUN UP INSIDE THE MAST. INSTALL THEM BEFORE GLUING UP. WHEREVER THE MAST IS SOLID, CUT A SLOT TO TAKE THE HALLIARDS.

FIG. 6
PEAR-SHAPED MAST DETAILS

from underneath; then unclamp and saw and plane to the exact shape. Try it for fit. If it's not quite right, mark the high spots and plane off until it fits exactly into the rabbet formed by the keel and keel batten. At the stem, the rabbet has to be chiseled out. This is done by clamping a narrow strip of the planking material in place and cutting a little notch in the stem to allow it to fit flush. Repeat this in several places; then join the notches with a continuous cut. The end of each plank will have to be shaped slightly to fit into this curved rabbet.

When the first pair of planks is on, clamp the second pair in position and mark, saw, and plane to shape as described before. Use 1½-in. No. 10 screws for fastening the planking to the framework, spacing them 3 to 4 in. apart and counterboring and plugging with ½-in. boat bungs. The body bit should be 13/64 in. and the lead bit, No. 30. Put good waterproof glue between the planking and the keel, chines, stem, and transom. Fasten the planking to both the transom and its cheek piece.

The best way for an amateur to finish the seams between planks is to have the planks butt flat against each other for the first ⅛ in. out from the frames; then to vee them just enough so you can put in a thread of calking cotton and cover off with seam compound. The amount of space between seams is a matter of guessing. The drier the wood, the greater the space. If the seams are made too tight, they may swell enough to pull out the fastenings when the boat gets soaked up with water. As you add the bottom planking, you'll come to the edge of the chine. The planks should be mitered here to fade off into a feather edge. The pointed ends must be securely fastened into the chine and into the edges of the adjoining planks or they will work out.

The topside planking is somewhat easier to put on. Most amateur-built boats have two planks on each side and many have three. Start each plank at the stem, fastening it in place; then bend it around the boat, securing to each frame as you go. If your wood is very dry, you may have trouble bending the topmost plank into place. Overcome any danger of cracking by soaking the wood with wet cloths wrapped around it. To keep the wood wet, occasionally douse it with hot water. Before bending, give the water plenty of time to soak through the wood.

When the planking is all in place, take the hull off the building form and turn it rightside up. Next, cut the slot for the centerboard. It must be accurately made and squared at the ends. Most small boats have trouble at this point, so be warned in advance—make a cabinetmaker's job of the centerboard trunk. Note that the center portion of Frame No. 3 must be cut away to allow the bed logs to rest on the keel. Fasten the bed logs to this frame on both sides with brass angle bars, screwing into the bed logs and bolting through the frame ends. It's important to allow ample width inside the centerboard trunk so when the wood swells you'll still be able to raise and lower the board. On the other hand, you don't want to make the slot too wide or it will affect the speed of the boat. The more you let water get up in the slot and slosh around, the slower your boat will be. A good compromise is clearance of about ⅛ to $\frac{3}{16}$ in. on each side of the board. Make the soft-pine end pieces long enough to protrude down through the slot and cut them off flush with the outside of the keel. The trunk is set down on a canvas gasket soaked in white lead and secured in place with bolts spaced 4 to 5 in. apart. Counterbore for the heads in the underside of the keel and set up the nuts tightly on the inside.

The deck-beam construction is clearly shown in Fig. 5. The crown of the deck may be anywhere from ½ to 1 in. for every foot of beam. This means that the crown must be between 2½ and 5 in. at the widest point of the deck. The beams are sawn to radius from Sitka spruce and are fastened down to the clamps.

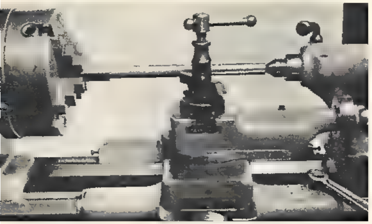
Make the rudder and tiller as shown in Fig. 5. The mast detail is given in Fig. 6. It is simply two pieces of spruce that are routed out, glued together, and then shaped. There are no screws, bolts, brads, or other fastenings in it. The slot for the bolt rope should be slightly larger than the diameter of the rope. Run the stainless-steel halliards up inside the mast. On a lot of present-day *Snipes*, the mast is stepped on

HAND KNURLING TOOL

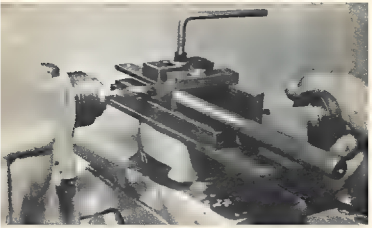
for your shop

Eliminate strain and wear on your lathe spindle bearings and prolong the life of your 60-degree tailstock center with this easily made tool.

Chuck the ⅝ in. sq. bar stock in a 4-jaw and turn 6 inches of one end down to ½ in. diameter.



Clamp the handle stock on your compound or else use a milling attachment to mill the slot.



The ½x5/6x2¾ in. tie bar is also cold rolled steel drilled as indicated in the Fig. 3 drawings.

By Frank Faber

Tool Room Section Foreman
Sperry Gyroscope Company

KNURLING on small bench lathes most always puts a heavy strain on the spindle bearings. What's more, this operation does not help to prolong the life of your 60-degree tailstock center. Egg-shaped and scored center holes also result from using the conventional tool post knurls, especially after the knurl wheels have become dull. These holes in turn can give lots of trouble, particularly if they are needed in future operations.

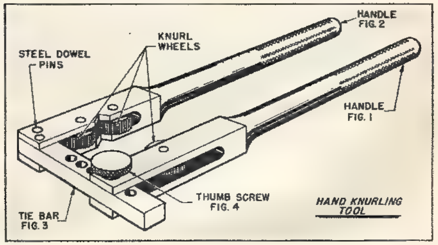
The hand knurling tool described in this article will eliminate all the aforementioned hazards and, with a bit of practice, anyone can produce perfect knurls. By gradually squeezing the handles together and applying a slight pressure toward the head or tailstock, a knurl is easily made. For use on different size diameters, a thumb screw and tie bar arrangement permits moving the handles closer together or further apart to accommodate the work.

The two handles, Fig. 1 and 2, are made from ⅝ in. sq. x 9 in. long cold rolled steel. First, center each on both ends, either in the lathe or drill press. Then, chucked in a 4-jaw, turn the ½ in. diameter handle, leaving the indicated radius at shoulder. Finally, knurl the end.

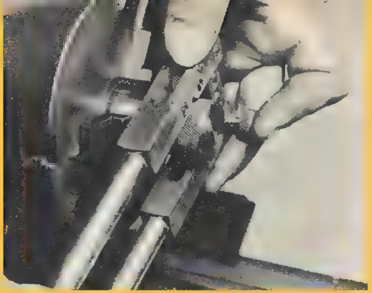
The pieces are now reversed and held on the ½ in. diameter in either a 3-jaw chuck or ½ in. collet. Drill a 19/64 in. diameter hole into the square end 2⅛ in. deep. This hole is drilled only to remove stock so that the slotting operation, which can also be done on the lathe, is made easier.

Now a $\frac{5}{16}$ in. wide slot is milled into the square end of both handles approximately 2⅛ in. deep. This can be done by using the milling attachment or you can clamp it to your compound and use an end mill to cut the slot.

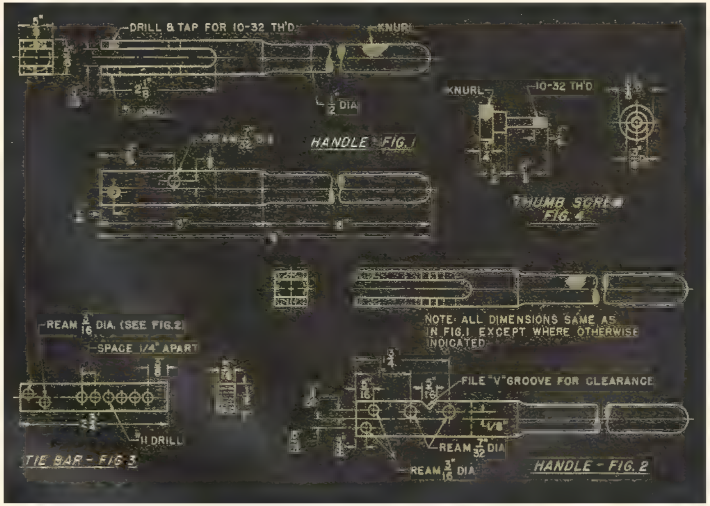
A piece of $\frac{5}{16}$x½x2¾ in. cold rolled steel is needed for a tie bar, which is used to join the two handles together. This piece is standard stock size but can be sawed from $\frac{5}{16}$ in. plate steel and finish-filed to ½ in. wide and 2½ in. long. Drill six No. 11 holes into the tie bar, in the position shown. The thumb screw is made from ⅝ in. diameter steel and [*Continued on page* 140]


HANDLE FIG. 2
KNURL WHEELS
STEEL DOWEL PINS
HANDLE FIG. 1
THUMB SCREW FIG. 4
TIE BAR FIG. 3
HAND KNURLING TOOL

Drill and ream the holes for the knurl wheels to 7/32 in. diameter. Press dowel pins in place.



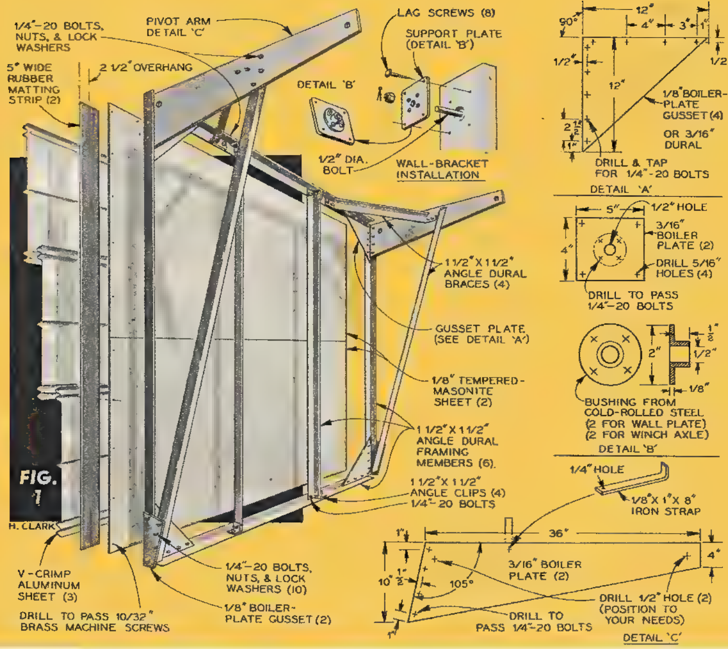
The completed tool in use. Squeeze the handles tightly together and you're off to a perfect knurl.


5"
DRILL & TAP FOR 10-32 TH'D
KNURL
2⅛
½ DIA
HANDLE - FIG. 1
KNURL
10-32 TH'D
THUMB SCREW FIG. 4
REAM 3/16 DIA. (SEE FIG. 2)
SPACE 1/4" APART
NOTE: ALL DIMENSIONS SAME AS IN FIG. 1 EXCEPT WHERE OTHERWISE INDICATED
FILE "V" GROOVE FOR CLEARANCE
5/16
5/16
1/8
11 DRILL
REAM 7/32 DIA
REAM 3/16 DIA
TIE BAR - FIG. 3
HANDLE - FIG. 2

Auto-Magic GARAGE DOOR

Now, neither rain nor snow nor sleet nor darkness of night need deter you from putting your jalopy away.

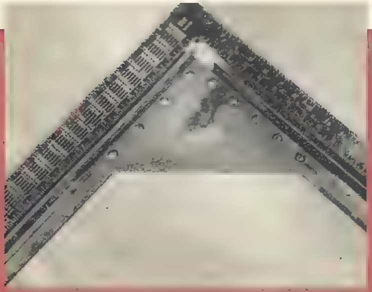
By Marylou and Peter Gerlach


1/4"–20 BOLTS, NUTS, & LOCK WASHERS
PIVOT ARM DETAIL 'C'
LAG SCREWS (8)
SUPPORT PLATE (DETAIL 'B')
5" WIDE RUBBER MATTING STRIP (2)
2 1/2" OVERHANG
DETAIL 'B'
1/2" DIA. BOLT
WALL-BRACKET INSTALLATION
1 1/2" X 1 1/2" ANGLE DURAL BRACES (4)
GUSSET PLATE (SEE DETAIL 'A')
1/8" TEMPERED-MASONITE SHEET (2)
1 1/2" X 1 1/2" ANGLE DURAL FRAMING MEMBERS (6)
1 1/2" X 1 1/2" ANGLE CLIPS (4)
1/4"–20 BOLTS
FIG. 1
H. CLARK
V-CRIMP ALUMINUM SHEET (3)
DRILL TO PASS 10/32" BRASS MACHINE SCREWS
1/4"–20 BOLTS, NUTS, & LOCK WASHERS (10)
1/8" BOILER-PLATE GUSSET (2)
90°
12"
4"
3"
1"
1/2"
1/2
12"
1/8" BOILER-PLATE GUSSET (4) OR 3/16" DURAL
2 1/2
1"
DRILL & TAP FOR 1/4"-20 BOLTS
DETAIL 'A'
5"
1/2" HOLE
4"
3/16" BOILER PLATE (2)
DRILL 5/16" HOLES (4)
DRILL TO PASS 1/4"–20 BOLTS
2"
1/2"
1/2"
1/8"
BUSHING FROM COLD-ROLLED STEEL (2 FOR WALL PLATE) (2 FOR WINCH AXLE)
DETAIL 'B'
1/4" HOLE
1/8" X 1" X 8" IRON STRAP
36"
4"
1"
1"
10"
1/2"
105°
1"
3/16" BOILER PLATE (2)
DRILL 1/2" HOLE (2) (POSITION TO YOUR NEEDS)
DRILL TO PASS 1/4"-20 BOLTS
DETAIL 'C'

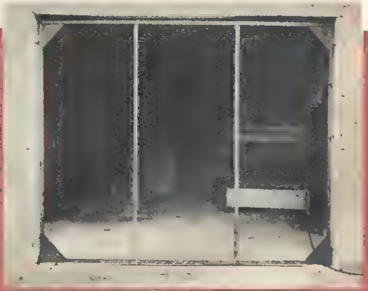
DO you hate getting out of your car to struggle with a stubborn garage door on a rainy night? Install this automatic job and your worries are over—a mere flick of your finger sets it in operation.

Begin construction of the door by cutting the pieces of dural angle bar that form its frame (Fig. 1). The lengths of two of the pieces should equal the width of the door opening minus 1½ in. Two more pieces should be made the height of the door opening minus 4½ in. Following this, cut four gusset plates (Detail A). After finishing the plates by drilling the bolt holes in them, use them as templates to locate companion holes in the above-mentioned frame members. Drill and tap the companion holes and bolt the gusset plates to the frame members, taking care to produce perfectly square corners. Cut two more vertical pieces of angle bar and secure them to the frame, as detailed, with angle clips and bolts. Place the completed frame in the doorway, propping it on all four sides to hold it in place as shown in one of the photos, and check for proper clearance and squareness.

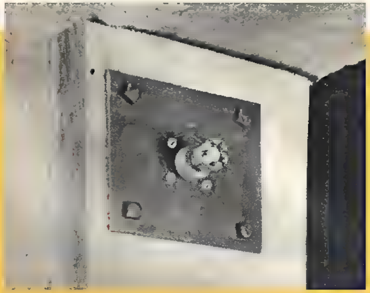
The next step is to lay out, cut, and install the two pivot arms for the door (Detail C, Fig. 1). They are bolted to the frame and the bolts are center-punched to lock them in place. Now make the wall supports (Detail B, Fig. 1) on which the pivot arms rotate to open the door. If the garage is of frame construction, you will need four plates, a pair for each side. For



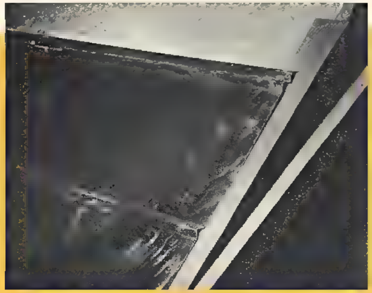
To be sure that the door frame is perfectly square, check frequently when bolting the gussets in place.



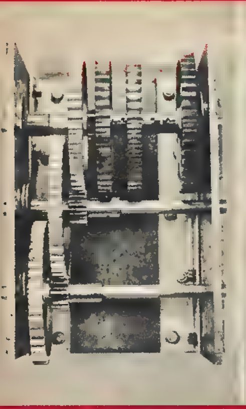
While aligning and securing the necessary fittings, wedge the uncovered frame tightly into the doorway.

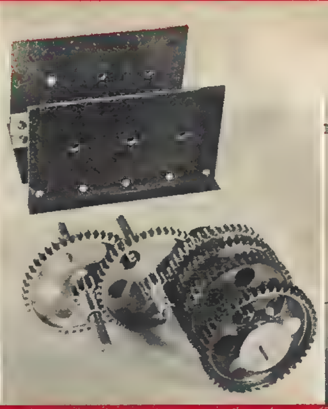


When hanging the door on the pivot bolts, washers are used as spacers to center door in its opening.



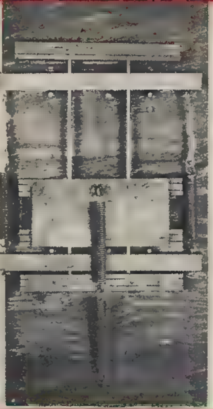
Masonite, V-crimp aluminum roofing, and two strips of rubber matting are used to make the door facing.


Assembled winch showing shafts and gears. Extra gears on top


Before assembly, the shafts, gears, and gear housing that

When the door is closed, the sliding block on the automatic

Here's what the installation looks like when the action is


Close-up of the control panel. The six-toggle setup has been

A key-type waterproof driveway switch is used to discourage

a masonry garage, you'll need but one on each side because the pivot bolts will be embedded in cement.

After the wall supports are completed, lay out their positions by pencilling through the pivot-arm holes to locate the pivot points on the jambs. Using each mark as a center, lay out the other holes to be bored in the jambs. It is extremely important that the wall supports be installed in a careful manner, making sure they are anchored properly, for the entire weight of the door will rest on these supports. Run the pivot bolts through the pivot arms into the supports; then put a washer and lock nut over each of the bolts.

Next, install the four diagonal door-frame braces—two running from the pivot arms to the top horizontal member and the other two from the pivot arms down to gussets fastened at the bottom corners of the frame.

The frame is covered with ⅛-in. tempered Masonite and V-crimp aluminum roofing, which are secured to the vertical frame members with closely spaced machine screws. Strips of rubber matting go between the layers and project 2½ in. beyond the vertical edges of the door in order to form watertight seals against the door jambs when the unit is closed.

This completes the door proper. The various controls are now installed, starting with the rollers (Fig. 2) on which the lifting cables travel. One roller goes at each side on the inside face of the door frame 34 in. below the pivot bolt. A second set of rollers is installed 4 in. above the top of the door frame, as shown in Fig. 2. If you can't obtain war-surplus units to use here, you can make up satisfactory ones employing Boston Gear No. 2008 rollers.

To lift the door, you'll need a winch. Make the body of ¼-in. boiler plate and 1½x1½-in. angle bar. The drive shafts are ½-in. drill rod to which the gears are keyed or brazed. Both ends of each shaft are drilled for cotter pins. The gears give a reduction of 20 to 1, consequently a 1/10-hp motor is ample for the power unit. Gears for the unit shown were picked up around the shop, however Boston Gears No. GB-20 and GB-80 can be combined with a compound steel bushing (No. GBB-16) to work in the same ratio. The drive-shaft holes in the body should be drilled through both plates at the same time to insure their matching. Two flange sockets (Detail B, Fig. 1) are needed on the final or cable-spool shaft to take the load. The motor driving the winch must be one that can be reversed by means of a double-pole, double-throw switch arrangement.

A control board is needed to group the six switches that automatically govern the door movements. This is shown in Fig. 3. A pair of springs connects the ends of the hardwood sliding battens, holding them against the pull of the center sliding block until the door starts to move. As soon as the door starts upward, the sliding block moves downward, permitting both single-pole switches to be drawn inward toward the center of the panel. When the door reaches its uppermost position, the block forces the lower set of switches downward, thus stopping the motor and at the same time setting it in reverse so when the next contact is made the door will close. The driveway switch acts only to apply current to start the motor; so the key should be withdrawn the [*Continued on page 142*]

FIGURE 2

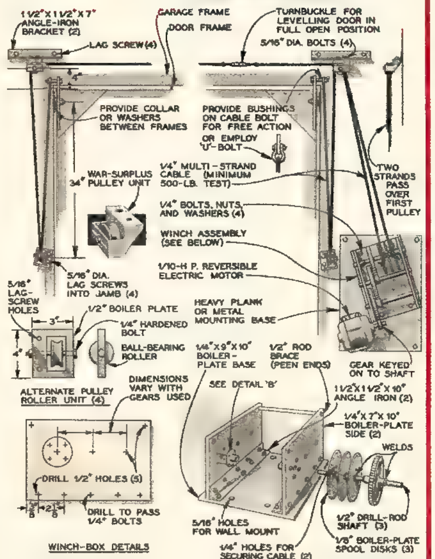
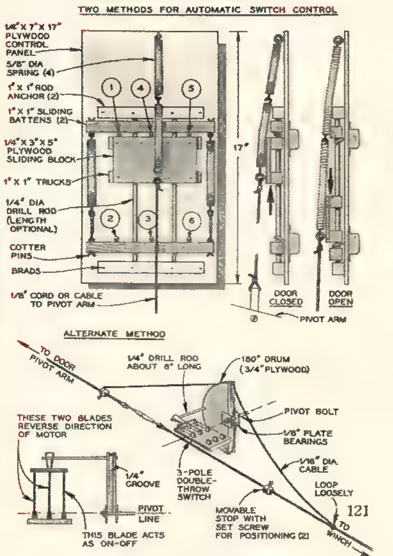
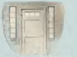

1 1/2" X 1 1/2" X 7" ANGLE-IRON BRACKET (2)
LAG SCREW (4)
GARAGE FRAME
DOOR FRAME
TURNBUCKLE FOR LEVELLING DOOR IN FULL OPEN POSITION
5/16" DIA. BOLTS (4)
4"
PROVIDE COLLAR OR WASHERS BETWEEN FRAMES
PROVIDE BUSHINGS ON CABLE BOLT FOR FREE ACTION OR EMPLOY 'U'-BOLT
1/4" MULTI-STRAND CABLE (MINIMUM 500-LB. TEST)
34"
WAR-SURPLUS PULLEY UNIT
TWO STRANDS PASS OVER FIRST PULLEY
1/4" BOLTS, NUTS, AND WASHERS (4)
WINCH ASSEMBLY (SEE BELOW)
1/10-H P. REVERSIBLE ELECTRIC MOTOR
5/16" DIA. LAG SCREWS INTO JAMB (4)
5/16" LAG-SCREW HOLES
1/2" BOILER PLATE
HEAVY PLANK OR METAL MOUNTING BASE
3"
4"
1/4" HARDENED BOLT
BALL-BEARING ROLLER
1/4" X 9" X 10" BOILER-PLATE BASE
1/2" ROD BRACE (PEEN ENDS)
GEAR KEYED ON TO SHAFT
ALTERNATE PULLEY ROLLER UNIT (4)
DIMENSIONS VARY WITH GEARS USED
SEE DETAIL 'B'
1 1/2" X 1 1/2" X 10" ANGLE IRON (2)
1/4" X 7" X 10" BOILER-PLATE SIDE (2)
WELDS
DRILL 1/2" HOLES (5)
DRILL TO PASS 1/4" BOLTS
3/8
2 1/8
5/16" HOLES FOR WALL MOUNT
1/2" DRILL-ROD SHAFT (3)
1/8" BOILER-PLATE SPOOL DISKS (3)
1/4" HOLES FOR SECURING CABLE (2)
WINCH-BOX DETAILS

FIGURE 3


TWO METHODS FOR AUTOMATIC SWITCH CONTROL
1/4" X 7" X 17" PLYWOOD CONTROL PANEL
5/8" DIA SPRING (4)
1" X 1" ROD ANCHOR (2)
1" X 1" SLIDING BATTENS (2)
1/4" X 3" X 5" PLYWOOD SLIDING BLOCK
1" X 1" TRUCKS
1/4" DIA DRILL ROD (LENGTH OPTIONAL)
COTTER PINS
BRADS
1/8" CORD OR CABLE TO PIVOT ARM
1
4
5
2
3
6
17"
DOOR CLOSED
DOOR OPEN
PIVOT ARM
ALTERNATE METHOD
TO DOOR PIVOT ARM
1/4" DRILL ROD ABOUT 8" LONG
180° DRUM (3/4" PLYWOOD)
PIVOT BOLT
1/8" PLATE BEARINGS
1/16" DIA. CABLE
LOOP LOOSELY
THESE TWO BLADES REVERSE DIRECTION OF MOTOR
1/4" GROOVE
PIVOT LINE
THIS BLADE ACTS AS ON-OFF
3-POLE DOUBLE-THROW SWITCH
MOVABLE STOP WITH SET SCREW FOR POSITIONING (2)
TO WINCH

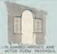
Ugly door, upper right, was replaced with glass brick.

SMALL-AREA TREATMENT WITH GLASS BRICK CAN BRIGHTEN AND DECORATE THE HOME

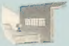


FLANKING FRONT ENTRANCE FOR GREATER BALANCE

[illegible] WITH EXTRA LIGHT



FLANKING ARCHES ARE INTER-ROOM PASSAGES



EXTERIOR WALL WITH [illegible] WINDOW

Modernize with GLASS BRICK

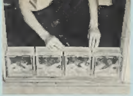
By Marylou and Peter Gerlack

YOU can, like we did, add a modern touch to your home by installing some glass brick. Its modular adaptability to existing door and window frames makes its installation surprisingly easy.

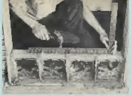
After redecorating our reception hall, we still had an ugly door at the head of the stairwell—a leftover from a long-since-removed balcony—which, no matter what we did in an effort to hide it, spoiled the general effect. It did, however, serve the function of brightening the upper stairs when it was left open; so we decided to remove it and fill in the space with glass brick.

There are a number of designs available, as well as two different sizes. We chose a wavy finish in the 4x7¾x7¾-in. size. The first step was to take the door from its hinges; then we removed the molding and trim from the door jambs. We next strengthened the door frame by copiously nailing the jambs, sill, and header to the existing two-by-fours.

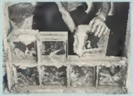
The procedure for applying the brick is straightforward. Lay the first course on the sill and space the bricks out equally to determine the sizes of the joints to be filled with mortar; then, to ascertain the space between rows, mark off on each door jamb lines parallel to the floor at 8½-in. intervals. [Continued on page 142]



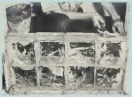
1 Method of estimating necessary space between bricks (to be filled in later with mortar).



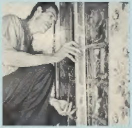
2 Use a carpenter's square or straightedge to make sure that each course of bricks is level.



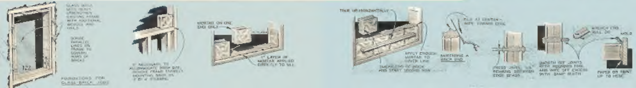
3 Here a brick has been properly coated and is being affixed to the previously laid bricks.



4 Finishing units serve to anchor each course of glass bricks properly to the house frame.



5 After installing each course, make sure that it is perfectly plumb with previous courses.



GLASS BRICK WITH HEAVY ... STRENGTHEN EXISTING FRAME WITH ADDITIONAL WOODS AND NAILS
SCRIBE PARALLEL LINES ON FRAME TO GOVERN ROWS OF BRICKS
FOUNDATIONS FOR GLASS-BRICK JOBS
IF NECESSARY TO ACCOMMODATE BRICK SIZE, REMOVE FRAME ENTIRELY, MOUNTING BRICK ON 2 BY 4 STUDS.
MORTAR ON ONE END ONLY
1" LAYER OF MORTAR APPLIED DIRECTLY TO SILL
TAMP UP HORIZONTALLY
APPLY ENOUGH MORTAR TO COVER LINE
SMEAR END OF BRICK AND START SECOND ROW
MORTARING A BRICK END
PILE AT CENTER—WIPE TOWARD EDGE
PRESS JOINT ... REMAINS BETWEEN EDGE BEADS
SMOOTH SET JOINTS WITH ROUNDED TOOL AND WIPE OFF EXCESS WITH DAMP CLOTH
MOLD
PAPER OR PAINT UP TO HERE

CAR CARE

Photo by Robert Brightman

Doors squeak? Most often striker plate is to blame. A grease stick is the answer, but in a pinch, just rub some soap on latches and strikers.

Slow starting may be due to loosening of the nut which holds the battery cable to the starting motor. Brighten nut and lug before tightening.

When you can no longer adjust the clutch pedal for the usual 1 in. of free pedal play, you will know that the clutch plate lining is worn out and that a replacement is in order. No need to be fooled here.

Slow starts may be due to late ignition timing. Sluggish firing gums up the engine for further delays. A too advanced spark will also cause trouble through pre-ignition and backfiring.

The overrunning starter drive clutch should not be cleaned in a degreasing agent. It is packed in grease.

Hard shifting with older cars is often due to wear on the gear teeth or because of gummy lubricant.

Gas leakage between the center electrode and the porcelain of a spark plug may raise temperature of its points sufficiently to burn them.

Apparent lack of power may be due to the floor covering being bunched up under the accelerator pedal.

Rubber floor mats come in mighty handy for slipping under a spinning rear wheel. Your best bet, however, is chains when streets start to ice up.

With Fred Russell

What causes a rapid clicking noise in my 1947 Studebaker when I take my foot off the gas? Lionel Carnera, Chicago, Ill.

That clicking noise you hear seems to indicate loose tappets.

I have installed a new motor including carburetor, points, plugs and clutch in my 1938 Ford, and yet I still get less gas mileage than I did before. George Bruttdish, Ulrich, Pa.

Low gas mileage may be due to need for retiming the ignition, also carburetor float level may be too high.

What is the trouble with my 1946 Hudson? I am unable to get more than 16 mpg. P. R. Mouhts, Fremont, Ohio.

Under separate cover we are sending you a special article which will tell you how to increase your gasoline mileage.

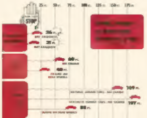
After 15,000 miles I replaced a slipping clutch in my 1946 Buick, and now, after 3 months, a chattering is developing in the clutch when I start in first gear. It is especially noticeable in damp weather. Frank De Rosa, West Haven, Conn.

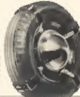
You evidently have an inferior lining on your clutch plate; sensitivity to moisture indicates this fact.

My 1946 Packard yields excellent performance after the points have been cleaned and adjusted. Then, after 300 miles, performance drops about 3 or 4 miles less per gallon. Would platinum ignition points help? George F. Mehaly, Waterbury, Conn.

Doubt whether special breaker points would help you. Packards have always been very sensitive to breaker point adjustments.

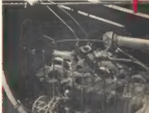
EASE UP IN A FREEZE-UP. The National Safety Council has released the chart below showing the need for especially careful driving in the winter.





These emergency "chains" are made of rubber. Band passes around wheel and is tightened by drawing up on a lock nut with a screwdriver called "individuals."

This owner has really done a good job on Chevrolet head. Carbon was removed with aid of scratch brush mounted on electric drill. Valve springs should have a tension of 42 pounds up to 1939 models and 54 pounds on 1940-49 jobs. Set tappets (hot) at .006 for intake and .013 for exhaust.



What To Do With Your Pictures

Putting them in the wastebasket is no solution, except if they are really bad. Have you considered an album?

By H. Bezold

To assure attractive pages, first lay the pictures loosely on the page to determine best position.

IN our house we used to have a problem which may be somewhat similar to one you now have in yours!

Know what it was? It was negatives, prints, pictures! What were we to do with them? Here we were, sold on photography, getting the world's biggest bang out of taking pictures of the youngsters, scenes, still-life, and what have you—and then never doing anything with our pictures.

The negatives began to pile up—drawers full of them. Prints began to spill out of cupboards when we opened doors. When we wanted to look at a print, or show it to somebody—well, we never could find it. But now! Ah, what a change!

The reason why this case of "paradise found" has come to our home is simple. We sat down one night and took stock of our situation. "This," we said, "is getting out of hand and now is the right time to do something about it."

Albums—good, snappy, up-to-date albums—were the answer we found best met our needs for most pictures. We learned that by applying a little imagination to picture layout—and by juggling print size so that not all of the prints on a page were the same size, or laid out in the same manner—we produced the most interesting effect. We discovered, too, that having all of our pictures in albums is a convenience and a matter of pride. We find it easy to locate pictures we want to show friends—and we get a tremendous amount of satisfaction and pride from showing them in such a manner.

Big enlargements, of course, don't fit into picture albums like small prints. Nobody expects them to. But a friend taught us a storage trick which is really neat. This friend takes two of the heavy cardboard stiffeners which are packed in envelopes of enlarging paper, and tapes them together along one side with a wide strip of adhesive tape. That gives him a rough folder into which big enlargements can be slipped.

Then he mounts an attractive print on the front cover. Within such a folder you'll find you can store a dozen prints—or even two dozen or more—and keep big enlargements flat, always available, and ready for instant showing.

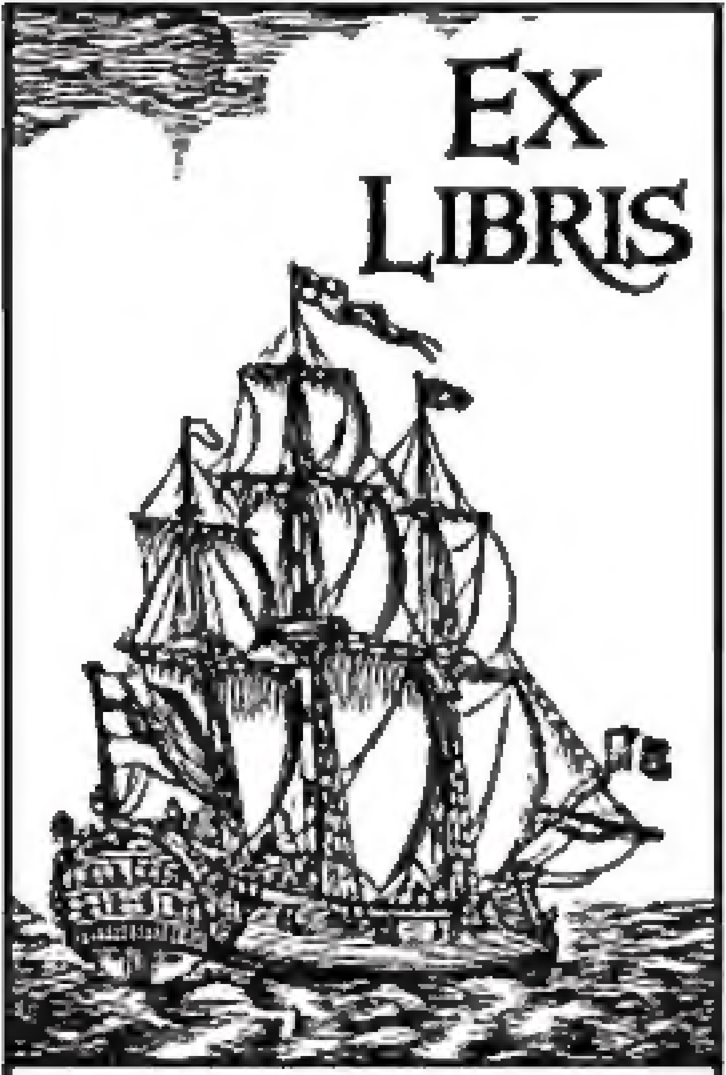
But here's just one note of warning—a set-up like ours isn't an overnight matter. You can't say, "I'll do it," and have it complete before dawn. You'll have to put some thought, time, and a little work into getting your pictures organized and collected in this way. But whatever time it takes—and whatever the effort required—you'll find, in the long run, that it will pay off splendidly. We know! •

An easy and lasting method of mounting snapshots in your album is to use dry mounting tissue and a mounting iron. Prints may be removed with heat.

A separate album for a special record of the youngsters is a good idea. Such pictures look best on a light background

Probably the best kind of an album is the loose-leaf kind. Your mounting job will be easier if you remove the pages.

Prints kept in an orderly album are a pleasure to show. The author devotes one day a month to this work.



Anon. Malefactor